MARINE REVIEW.

VOL. V. CLEVELAND, OHIO, THURSDAY, JANUARY 28. 1892. No. 5.

Prospects in the Iron Market.

Prospects in the iron market at this time of the year are especially interesting to lake vessel owners, and it is unfortunate on this account that notwithstanding big transactions in the steel rail trade, and indications everywhere of an enormous demand for iron during the coming year, prices of pig iron do not improve. Steel rail manufacturers have bought supplies of iron ore, but the pig iron market is probably no better than it was at the opening of the year and transactions between furnace owners and ore producers are delayed on this account. It is somewhat discouraging that the market does not improve in this important regard, as on every hand there are reports of great preparations for increased business during the year. The western railroads at their January meetings decided to make heavy purchases of materials, including rails, cars and locomotives, and while this has not yet reached the market, its influence is, of course, felt in an indirect way. Great importance is attached to preparations on the part of the railways for the business attending the World's Fair.

Question of High or Low Water.

Vessel owners and shippers who have been considering the question of high or low water in connection with freight contracts for next season were much interested in the opinion Gen. Poe, expressed in the REVIEW last week. Gen. Poe sees no reason for expecting that the stage of water will be any better in the spring than it was at the close of navigation last fall, and as he is known to be fully acquainted the with conditions, this opinion will carry great weight. Still the question is, of course, one of great uncertainty, and in some quarters good reasons are given for expecting an increased depth of water, especially on Lake Michigan and Huron. It is claimed that for the first time in several years the streams and wells of Michigan are found to be full, denoting moisture in the earth. In previous years, it is argued, there was no moisture and with a thaw in the spring the water was absorbed in the dry earth.

Pig Iron and Steel Rails.

Complete returns of the production of pig iron and the manufacture of steel rails in 1891 have just been given out by the American Iron and Steel Association. The total production of pig iron in 1891 was 9,273,456 net tons of 2,000 pounds, or 8,279,870 gross tons of 2,240 pounds, against 9,202,703 gross tons in 1890, a decrease of 922,833 gross tons, or over 10 per cent. The decreased production may be said to have all occurred in the first half of 1891, as the production in the second half of 1891 was larger than either half of 1890.

"Our production of pig iron in the second half of 1891," says the Bulletin of the association, "was 269,573 gross tons larger than in the second half of 1890, which was the half year of largest production in our history prior to 1891. Our production in the second half of 1891 was at the rate of 9,823,526 gross tons per annum. It was larger than in any full year in our history down to and including 1885, and larger than Great Britain's production in any whole year down to and including 1867. Our prduction of pig iron in 1891 was about 1,000,000 gross tons larger than Great Britian in the same year.

"The shrinkage in production in 1891 as compared with 1890 was distributed among the different fuels used in our blast furnaces, and it was shared by most of the pig iron producing states in the north and west, most notably in Pennsylvania, whice lost over 500,000 net tons, all in the first half of the year. But the Southern States lost in the aggregate less than 40,000 net tons, while many of them actually increased their production in 1891 over 1890.

"The stocks of pig iron which were unsold in the hands of manufacturers or their agents on Dec. 31, 1891, which were not intended to be used by the manufacturers, amounted to 596,333 gross tons, against 422,055 gross tons on June 30, 1891, and 608,921 gross tons on Dec. 31, 1890. These figures include a part of the stocks of pig iron held at the periods named in storage warrant yards, and which was under the control of the makers, the part not under their control on the 31st of December last amounting to 30,900 gross tons, which added to the 596,333 tons above mentioned, makes a total of 627,233 gross tons which were on the market at that date. On Dec. 31, 1890, the storage warrant yards held 52,900 gross tons of pig iron which were not under the control of the makers, making a total of 661,821 gross tons which were then on the market. The difference between the aggregate of unsold stock at the close of 1890 and 1891 was only 34,588 gross tons. If the demand for pig iron for consumption were now exceptionally active and if prices were advancing the stocks held at the close of 1891 would not be excessive. It is for the producers themselves to decide whether these conditions exist. It will be remembered that at the close of 1890, and soon afterwards, many furnaces were blown-out because of the accumulation of unsold stocks, yet they did not then aggregate much more than the quantity with which we began the present year."

The association also presents statistics of the production of Bessemer steel rails of all weights and sections in the United States in 1891, exclusive of the comparatively small quantity made by other manufacturers from purchased blooms. The total production in 1891 was 1,366,259 net tons, or 1,219,874 gross tons, a decrease of 577 615 gross tons from the production in 1890. The following table shows the production in each half of 1891 and the total production of the year as compared with that of 1890, with exception above noted for both years.

States.	First half, 1891, net tons	Second half, 1891, net tons.	Total 1891, net tons.	Total 1890, net tons.
Pennsylvania	439,902	506,252	945,154	1.396,460
All other states	140,027	280,078	420,105	616 728
Total net tons	579.929	786 330	1,366,259	2,013,188

Some Wonderful Figures on Speed.

In an article on "Atlantic Liners, Past Present and Future" Engineering says: "As to speed there is really no insurmountable difficulty in attaining 40 knots, but this would require something like 160,000 indicated horse power with s venty boilers to generate the steam for the engines, and these wou'd burn considerably more than 2,000 tons of coal a day. The experience of the past suggest these figures. Some idea may be formed as to the size of vessel necessary for this machinery. We leave it to the imagination of the reader. The question is one of finance, and it might need a company of millionaires to own and run a fleet of such vessels. In ten years the speed has increased from 16 to 20 knots. and in the same time the indicated horse power has gone up from 6,000 to 18,000, while the size of ships has been doubled. To attain this result the ship of today burns 1,900 tons of coal in six days, whereas ten years ago 600 tons only were burned in seven and a half days."

Steel Steam Yacht Wadena.

An illustration of the steel steam yacht Wadena, built by the Cleveland Ship Building Company and owned by J. H. Wade of Cleveland, accompanies this issue. The boat, which left Cleveland some time ago for a trip around the world, is now crossing the Atlantic on a southerly course by the Bahamas, and it was expected that she would be heard from at Nassau, but there is as yet no cable established from that point. The yacht goes on to Sicily to meet her owner and family.

The New York Herald in describing the arrival of the Wadona at that port says: "At Tebo's wharf, foot of Twenty-sixth street, South Brooklyn, many of the largest steam yachts in the country are laid up for the winter. Imagine the surprise of the old salts who look after the yachts there to see a large steam yacht come into the basin, where the only yacht that is known to be still in commission is Mr. Hearst's Vamoose. None could make her out, but that she was pretty andnew there was no mistake. Finally Mr. Tebo satisfied curiosity by saying that she was the Wadena, owned by Mr. J. H. Wade Jr., of Cleveland, Ohio, and that she was built on the lakes and had come through the canal on pontoons.

"The Wadena is a beauty. She was built by the Cleveland Ship Building Company and is of steel, schooner rigged and driven by triple expansion engines. Her principal dimensions are as follows: Length over all 165 feet; length on water line, 145 feet; beam 21 feet; depth of hold, 10 feet, and draught, 11 feet. She has fine, easy lines and certainly looks as well as any yacht in the basin, which is saying a good deal, and reflects credit on her designer, Mr. A. Angstrum, and her builders. The only fault found was that she had too little freeboard—in other words, she sat too low in the water. She is painted white, with teak trimmings, and has a very giddy figurehead in the shape of a gilt mermaid which, in the matter of costume, would make Diana of the Tower blush with envy. First of all you come to the forward cabin or chart house, over which is the captain's bridge, which is fitted with a patent steam steering gear, and commands a view of the whole ship. The chart room is an airy and pleasant place, being panelled in mahogany, and fitted with plate glass windows. A settee covered with rich material forms a half circle around the room, and in mild weather it will make a delightful lounging and smoking room. A carved mahogany stairway leads down to the forward saloon or library, which takes up the whole width of the ship. This is finished in white mahogany, handsomely carved and polished. Well filled bookcases line the walls. A daintily carved writing desk is suddenly let into view by pressing a spring. Carved over it are the words. "The sea and air are common to all men." A handsome dome of ground glass admits light as do six portholes. At night six electric lights and numerous candelabra make the room very bright. The seats around the room are covered with salmon colored tapestry in which roses form a graceful pattern. On the port side is Dr. Powell's room which is fitted with every possible convenience and like the other rooms on this deck is finished in white mahogany. Dr. Powell will accompany Mr. Wade's party on their trip around the world.

"A hallway on the starboard side leads to the room which will be occupied by Mr. Wade's two little boys. Like most of the other rooms it contains two beds, folding washstand, clothes press and dresser. The woodwork is of white mahogany, while the sides are hung with blue silk tapestry. Opposite the hall, on the port side, is the room which Miss Wade and her maid will use. It is a trifle larger than the boys' quarters, has more closet room and is finished in rose colored tapestry. Before Miss Wade's room is reached the gun case is seen, and it is well filled with cutlasses, revolvers, rifles and shotguns, which may come in handy down in the South Seas. Next comes the owner's stateroom on the starboard side. The mahogany is elaborately carved. It has a double bed, a large bureau, roomy closet and movable reading desk and washstand. A porcelain lined bath, with hot and cold water, is beneath the floor of the room. A steel safe pops out at the foot of the bed by touching a spring. The next room will be occupied by Mrs, Wade and Mrs. Garretson, the mothers of Mr. and Mrs. Wade. Here the walls are hung with a slightly different pattern of tapestry. There are two beds and ample drawer and closet room. A bureau and sunken bathtub, as in the owner's cabin, is found. Near Miss Wade's room is a large apartment which will be used as a closet and bathroom. The pump attached to the closet will be worked by electricity, something new even for yachts. The sides of the hall are hung with tapestries of handsome patterns and quiet tones, indicating in a measure the taste of the owner.

The interior metal work of the yacht is of oxidized silver of unique patterns. Aft of the chart room on the main deck is the captain's stateroom, which is tastefully fitted up. Next is the main or dining saloon, which is one of the prettiest apartments in the yacht. It is finished in polished red mahogany, and the table and seats are of the same wood. The latter are simple and handsome. The table can seat eight persons. At the after end of the saloon set in the wall is a handsome wine closet and cooler, which is connected with the refrigerator in the butler's pantry adjoining the main cabin. The butler's pantry is filled with glass and china enough to start a hotel. A dumb waiter leads waiter leads to the cook's galley below. The Wadena will not carry any ice in its refrigator, but will use an ice machine. A handsome piano is one of the ornaments of the main saloon, on which you can see delightful little cupids blowing their pipes. Underneath the dining saloon are the officers and crew's mess and state rooms, which are fairly roomy and comfortable and well equipped for the long journey which the men will take.

"Briefly speaking the Wadena is a vessel of 198.71 gross tons and 74.81 tons net. She is built of steel from one-half to one-quarter of an inch in thickness with heavy frames of same. Her decks are steel, covered with wood. Her cabins are of steel plate, covered with teak. She has six water tight compartments and water ballast tanks with a capacity of eighteen tons. She has very heavy machinery for her size, and should be able to make the eighteen knots which her builders claim. She is fitted with a triple expansion engine having cylinders 15½, 26 and 42 inches in diameter and 22 inches stroke of piston. She has an independent air pump, circulating feed and bilge pumps. She is fitted with electric lights throughout, a forced draught fan and a complete distilling apparatus, combined with fresh water tanks with a capacity of 1,500 gallons. In addition she has a steam windlass and capstans. Her boiler is of Scotch type, 12 feet 6 inches in diameter by 12 feet 8 inches long. There are three furnaces 39½ inches in diameter, with grates 6½ feet long, and 234 tubes 3 inches by 9 feet. She also has auxiliary boilers for running the ice machine and electric lights. She carries four boats, consisting of the captain's gig, a naptha and steam launch, and dingy and metallic life boat. Twenty-six men including the officers and crew are required to run the Wadena.. Her skipper is J. C. Collamore, formerly of the steam yacht Cora; Mate J. Crosby; Second Mate, Harvey Hayman; Chief Engineer, F. B. Smith; First Assistant Engineer, William H. Leavy, and Second Assistant Engineer, William Kohl. Two cooks and two stewards will look after the wants of the travelers. Two coal passers, two oilers, and two firemen will be employed in the machinery department, while a quartermaster and five men will have charge of the deck."

Prominent in Lake Shipping Circles.

Announcement comes from Hamilton, Ont., of the death of two respected citizens of that place who were well known in different parts of the lakes. Thomas Myles, owner of the propeller Myles and prominent also as a leading coal dealer, had past his eigthtieth year before being called to join the silent majority. Mr. A. M. Robinson, whose death was announced Tuesday, was a shipbuilder and owner of the steamer St. Magnus. He met death through falling into the hold of his vessel while looking after winter repairs.

Capt. Daniel McQueen, who was also among the veterns in lake service, was seventy-six years of age when called a few days ago from a farm home at Granite Point, Mich., to which he had retired. He was a master of lake vessels in the sixties, having had charge, among other vesels, of the steamers Pacific, Columbus and J. D. Morton and schooners Marengo and T. D. Dole. He was keeper of the lights on the old channel, St, Clair Flats, before quitting the lakes and was the father of Capt. McQueen of Elyria, O.

As a result of the transfer of the tow barge J. J. Barlum, from A. E. Stewart and others of Detroit to H. J. Webb & Co. of Cleveland, F. W. Wheeler & Co. of West Bay City, will build for the Detroit parties a steamer, which will be a duplicate of the Tampa and Sauber, built recently at the same yard. Wheeler & Co's plant having eight boats under way is now as fully engaged as the owners desire to have it, but it is reported that the keel for a fourth big wooden steamer will be laid down at Davidson's West Bay City yard shortly.

Send 75 cents to the MARINE REVIEW for a binder that will hold 52 numbers.

Contract Freight Market.

Some very close estimates among vessel brokers and iron ore shippers in Cleveland show that of a probable production of 9,000,000 gross tons or more of ore next season, the transportation of about 4,100,000 tons by lake is provided for. These figures seem large but they include of course, the work of all the boats controlled by the big mining companies, as well as the ore contracted for by the American Steel Barge Company and about 600,000 tons covered by individual owners in Cleveland and Detroit. During the past few days a small quantity of Escanaba ore has been covered at $1 a ton for the full season, but as yet there is no rate made from Marquette. Vessel owners are still refusing these rates to a greater extent than was expected. More ore might be found at this time at $1.25 from the head of Lake Superior if the tonnage was to be had, but the shippers are not pressed into covering lake freights, as the sales of ore are still confined mainly to the big purchases made by the steel rail makers. Low prices on pig iron are still in the way of sales to the pig iron manufacturers.

Chicago is offering only 5 cents instead of 5½ cents for winter storage of grain and delivery at Buffalo in the spring.

Calling Attention to an Old Rule.

Vessel masters will find the following on page 56 under the heading of pilot rules in the pamphlet of general rules and regulations of the board of supervising inspectors of steam vessels:

"All coasting steam vessels, and steam vessels other than ferry boats and vessels otherwise expressly provided for, navigating the bays, lakes, rivers or other inland waters of the United States, except those mentioned in Rule 6, shall carry the red and green lights, as prescribed for ocean-going steamers, and in addition thereto, a central range of two white lights, the after light being carried at an elevation of at least fifteen feet above the light at the head of the vessel, The head-light shall be so constructed as to show a good light through twenty points of the compass, namely; from right ahead to two points abaft the beam on either side of the vessel; and the after light so as to show all around the horizon. The lights for ferry boats shall be regulated by such rules as the board of supervising inspectors of steam vessels shall prescribe."

Although this rule has been on the statute books for many years, it has never been enforced, but attention is now called to it by the local inspectors in Cleveland, who have been asked by the supervising inspector at Buffalo to give reasons why it has not been enforced. That the same question has been asked of local inspectors in other parts of the lakes, there seems to be little doubt. Whether the heads of the inspection service will will insist on the enforcement of the rule or not, is a question but it would seem as though there would be decided objections from vessel masters in event of an attempt to enforce it. An after light is now carried by nearly all steamers having tows, but to insist on the enforcement of this rule, which would require a center light aft 15 feet higher than the bright light forward, seems impractical in many cases. There is, anyhow, a great deal of inconsistency in this matter of lights on steam vessels. The law prescribes a certain height above the pilot house for the bright light forward. Tugs that are compelled to run under bridges cannot comply with this law.

A Bill Deserving of Attention From the Lakes.

Mr. Breckenridge of Kentucky has introduced into the House of Representatives a bill which, in event of its becoming law, may cause considerable annoyance to owners of lake vessels who employ keepers to look after their property during the winter. The measure provides that it shall be unlawful for any person to reside and make residence upon a boat on the lakes, rivers or other interior waters of the United States, unless a license so to do is first obtained for each head of family, for himself and his family; which license shall only be granted upon proof of the good character of the applicant and upon the payment of a fee of $25 annually. The license shall describe the points at which, or between which, said boat may lie or ply; and on each boat shall be painted in large letters on each side thereof, the name of the licensee, the home of the boat and the date of the expiration of the license. The license shall be issued under such rules and regulations and by such officers and employees of the United States as the secretary of the treasury may prescribe and designate.

This bill, undoubtedly intended for the purpose of exercising some jurisdiction over people who live afloat, in many cases for the purpose of evading state and local laws, was probably not intended to cover the legitimate pursuit of caring for vessels in winter quarters, and a proper amendment to it should be sought by lake representatives in Washington. Mr. Breckenridge's influence in the present Congress may result in the passage of the measure unnoticed unless it is attended to promptly.

In Detroit Ship Yards.

Special Correspondence to the MARINE REVIEW.

DETROIT, Mich., Jan. 28.—Big improvements being made by the Detroit Dry Dock Company are of most importance in a marine line here. Arrangements for an increase in facilities at the iron plant in Wyandotte are being made and a contract has just been let with the Berlin Iron Bridge Company of East Berlin, Conn., for a new boiler shop to be built of steel and brick of the latest and most approved type, with a complete outfit of hydraulic machinery and electric traveling cranes. The new shop is to be erected immediately, and completed as soon as possible. It will be 185 feet long, 70 feet wide, facing Atwater street and running east. It will have a large capacity for the manufacture of both marine and stationary boilers of all descriptions. This, together with their engine works, now under construction and soon to be completed, will place this concern among the leading ones in this line in the country. The cost of the new boiler shop including the tools, will be about $100,000.

A dredge is making a new slip at the iron yard, Wyandotte, which will add a capacity of three new ships to this yard. This will give a total capacity of four metal ships of the largest dimensions and two of moderate size. Additions will also be made to the machinery, and everything necessary to a most complete and economical plant will be had. About 200 men are now engaged at this yard, and work on the three ships under construction is being pushed.

Work on the ferry boat for the Detroit, Belle Isle & Windsor Ferry Company has been begun at the Clark dry dock. The Conemaugh sunk in the Detroit river in the collision with the New York has been finished and the boat will be taken out of the dock as soon as the ice will permit, when the steamer Philadelphia of the Anchor Line will take her place. The steamer James Fisk, Jr., is to have a steel arch put in and other repairs made.

At the main yard, foot of Orleans street, 250 men are now at work. Repairs on the steamer Kasota, in the large dock, employ about 175 men. The work of tearing away the injured parts is completed and construction has begun. It is expected that she will be finished in the next thirty days. Repairs to the dock itself are progressing favorably, and the success of the undertaking is assured.

Contract for a Big Dredge.

Special Correspondence to the MARINE REVIEW.

TOLEDO, O., Jan. 28.—George H. Breyman and Bros., contractors for public works, dredging, etc. of this city have contracted with the Bucyrus Steam Shovel and Dredge Company of Bucyrus, O., for the machinery for a new dredge which when completed, will be the largest dipper dredge in the world. She will have two engines, 16 inches diameter of cylinder by 18 inches stroke; will have double gear and double friction. The gear will be 8 feet in diameter, and 10 inches face; hoisting drum 36 inches in diameter. She will have steam cylinders for operating all hoisting frictions. Her swinging engines will be 9x12 inches and the dipper capacity six yards. Her hull will be 100 feet long, 34 feet beam and 9½ feet deep, entirely of oak with iron truss and iron head beams; anchors 30x30 inches hoisted by steam cylinders. This is the second dredge this well known firm has built within the past two years and it is safe to say that she will be a model dredge in every respect. The first dredge is 95 feet long, 30 feet beam and 9 feet deep; engines 15x16 inches. She has a record of 2,600 yards of mud in Maumee bay in 9 hours.

The Craig Ship Building Company will build a new sand sucker 140 feet long for H. Houghton and others of Detroit.

Extensive repairs are being made to the steamer St. Paul.

The Question of Taxation.

Special Correspondence to the MARINE REVIEW.

MILWAUKEE, Wis., Jan. 28.—At the annnal meeting of the Wolf & Davidson Steamship Company it was decided to locate the headquarters of the corporation in the town of Lake, a suburb of Milwaukee. In taking this step, which has for its object an avoidance of burdensome city taxes, the company is following out the course pursued by the Inter-Ocean Transportation Company and the Milwaukee Steamship Company,two local organizations, as well as several corporations of Cleveland, Detroit and other large lake cities. That the move will draw out unfavorable criticism is beyond question, but dollars count with people the world over and criticism will therefore have little weight. The taxes of the Wolf & Davidson Steamship Company for 1891 were a trifle short of $2.700, whereas for 1892 they may not exceed $320. The headquarters of the Milwaukee Steamship Company have been located in the town of Lake since its incorporati n, and taxes have never exceeded $160. In the season of 1890 the city swooped down upon the company for taxes to the amount of about $1,300, despite the fact that the town of Lake made the usual levy. Remonstrance proved unavailing, so the money was finally paid under protest. Instructions from the city attorney prevented a levy last season, and the steamship company will now look to the city for reimbursement at the tail end of legal proceedings if necessary. In the matter of taxes Chicago is said to be very easy on floating property. One steamer valued at $160,000 is mentioned on the quiet as having been taxed only $40 last season.

Capt. Elmer W. Craine, the absconding master of the steamer W. H. Wolf, has been heard from "out west," presumably San Francisco, and is now said to be enroute for New York on a sailing vessel. The father of the erring young man, Capt. B. P. Craine of ths steamer Ferdinand Schlesinger, will make a strong effort to induce him to return home and mend his ways, under promise that he will not be proceeded against by those from whom he obtained sums of money under false representations. Capt. Craine is an honest, upright, sober, hard-working man, of whom not a detrimental word can be spoken. He has spent eight seasons in the employ of Capt. J. S. Dunham, and four seasons with the Wolf & Davidson Steamship Company, and no questien has ever been raised as to his integrity. He is wintering at Buffalo, looking after the steamers W. H. Wolf and Ferdinand Schlesinger. Before leaving for Buffalo he contributed $1,000 toward the loss sustained by the Wolf & Davidson Steamship Company through his son.

Capt. Thomas Dunn, late of the steamer Arcadia, will command the steamer Joys during the coming season. The lower lake boats of the Milwaukee Tug Boat Line fleet will be commanded as follows: Steamer Helena, Capt. James Leisk; steamer Veronica, Capt. William E. Wright; tow barge Helena, Capt. John Leisk.

D. W. Chipman and other Milwaukeeans have sold the schooner R. P. Mason to Sheboygan parties for $2,950.

The tug Waubun towed the barge May Richards to Chicago Saturday night. The Richards was under engagement to load with grain at Chicago.

Lake Interests in New York.

Special Correspondence to the MARINE REVIEW.

NEW YORK, N. Y., Jan. 28.—"We want four more steel steamers, longer and deeper than the Mackinaw and Keeweenaw which you built on the lakes," said Mr. Samuel Holmes, in a conversation here a few days ago. Mr. Holmes is president of the Saginaw Steel Steamship Company, to which these boats belong. Continuing he said; "The Keeweenaw is tied up profitably on a long time coal contract and that leaves only the Mackinaw on the San Francisco-New York line which we have established. Both are good coal carriers, but we want four general or package freighters, as you call them. We want them ready for the spring of 1893. They must have an extra deck and carry as big cargoes of loose freight as ocean steamers of the same size."

Contrary to the general impression no lake builder will have the inside track, but the price will, and possibly the terms, but as to that I didn't inquire. It may prove a nice contract for some lake builder as soon as he empties his yard next summer.

An exceedingly well-posted gentleman gave me some "under-the-hat" information about that Chicago–Liverpool dressed beef line. There is no betrayal of confidence in stating that the promoter, who visited the lakes some time ago, is said to have struck pay-dirt in England to the extent of a $2,000,000 company, which is to build the twelve steamers, Welland canal size, which he proposed to several capitalists on the lakes. There is only one thing necessary to make this scheme practical—an air ship equipment that will enable the boats fly over the St. Lawrence river canal locks. Possible the promoter has inlcuded specifications for this uninvented appliance.

Lake captains who find themselves half a point off course after running in a fog half a day will appreciate a recent occurance in East river. A ferry boat started from its slip on the New York side to go across to Brooklyn or South Brooklyn. It was foggy, so foggy that appreciable chunks of the stuff could be picked up on deck. But surely anyone could steer across for a mile,even if they couldn't see the boat's nose. So they could if there were not ninety and nine other boats in the way. The chimes played on the engine room gong to stop, go ahead and back her hard, outrivaled the Trinity chimes.To cut a long story short that boat got lost and next morning when the fog cleared she was way below Govenor's island.

Passing down Wall street I noticed on a window front on the ground floor, the name of a firm of brokers for whom the lake underwriters have not the kindest of feelings. On inquiring for the gentieman who had charge of the department where risks on the finest class of lake steamers were taken and placed abroad at "ruinous rates," the good fortune was mine to be shown into him, and I was cautioned to ask for Mr.———, and no one else, for the reason that no one else knew anything about the business. Now, I had no expectation of getting even an interview and as a result no great hopes were frustrated. My purpose was to see the hawk that carried off all the spring chickens from the Inland Lloyds' barnyard. He was affable and entertaining and explained that he didn't want to be impertinent or sarcastic, but he really couldn't say whether the foreign underwriters were frightened by the number of expensive collision losses on boats in which they held risks, because, as he explained, an interview in the REVIEW would reach these underwriters and it might not reflect their views properly. He hoped there would be no offense taken, because he wouldn't say how much lower their rates were on A1 steel steamers than were the rates of home companies. This broker's magnanimity is a sure indication that the foreign companies will continue to take lake risks on the same scale as in previous years.

While talking with the secretary of one of the largest classification agencies, he complained that it was up-hill work to extend their classification to lake vessels. The rules of this association do not demand any needless exactions on vessels for the lake service, but the classification fee and inspectors expenses are sticklers. On a 2,000 to 3,000 ton cargo steamer the fees amount to about $300. Considered by itself it is no great amount but taken in connection with the fact that classification in Inland Lloyds costs nothing, it seems a great deal to builders. However, there are advantages in having a boat included in a standard of classification. One gain is said to be received in lower insurance if the boat classes high, and another is, that if the boat should be sent to the coast no trouble would be encountered in finding companies to take risks. When the tug Yulu arrived in Boston no insurance was to be had until she was inspected. This should be considered when lake builders take contracts for coast vessels.

Henry W. Granger.

EDITOR MARINE REVIEW :—In this morning's Free Press appears amongst local items the following paragraph:

"Harper hospital ambulance was called yesterday afternoon to the Brady block, at the foot of Woodward avenne, where Henry Granger was found to be suffering from hemorrhage of the lungs. He was taken to Harper hospital where he died about half-past eleven last night. Granger was a mechanical engineer fifty-six years old, and it is thought that he lived at St. Clair Mich."

Harry W. Granger merits more than a passing reference. There is not a man in the United States, probably, better known in his profession or who has had greater possibilities within his grasp. Beginning as a marine engineer, then mechanical engineer of the old Dry Dock Engine Works, later United States inspector of steam vessels for the district of Detroit, and afterwards, until his demise, doing business as a mechanical engineer and expert, there is scarcely a man from one end of the great lakes to the other connected with marine engineering who did not know him and recognize and respect his ability. The first fore and aft compound engine ever built in Detroit, (and probably on the lakes) was his production and was the progenitor of the long line of splendid machines which have brought fame to Detroit shops. A list of the steamers whose motive power he designed would be too long to give here but amongst them are some of our largest and finest as well as some of the smallest and speediest. The splendid pumping engines in Windsor's new waterworks are amongst his late productions.

Generous to an extreme and tender hearted as a child, the fault which clouded his later life may easily be forgotten. His mind was a mine of information, always and readily accessible to others, to an extent detrimental to his own interests, and his was a warm, impulsive nature warped by those who professed to be his friends.

The lake marine owes much to Harry W. Granger and amongst those who knew him he will long be remembered,not only for his natural brilliancy and originality in his profession, but for his generous disposition, which has helped many a one, and for his kindly nature, which made him no enemies.

HENRY PENTON,
Chief Draftsman, Frontier Iron Works.

Detroit, Mich., Jan. 24.

☞SEND YOUR ORDER FOR "PATTERSON'S NAUTICAL DICTIONARY" ($5) TO THE "MARINE REVIEW" AT ONCE.

Iron Mining.

VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter & Co., No. 104 Superior St. Cleveland, O.

Stocks.	Par Value.	Bid.	Asked.
Cleveland-Cliffs Iron Company.....	$100 00	$.....	$ 79 00
Champion Iron Company.....	25 00	.....	70 00
Chandler Iron Company.....	25 00	47 50	50 00
Jackson Iron Company.....	25 00	.....	100 00
Lake Superior Iron Company.....	25 00	.....	65 00
Minnesota Iron Company.....	100 00	79 00	81 00
Pittsburg Lake Angeline Iron Co.....	25 00	148 00	.....
Republic Iron Company.....	25 00	25 50	27 00
Ashland	25 00	.....	.....
Section Thirty-three.....	25 00	6 00	.....
Brotherton.....	25 00	2 50	3 00

Officers of mining companies elected recently are: Chapin —M. A. Hanna of Cleveland president; George H. Kent of Cleveland secretary and treasurer; H. McKay Twombly of New York and J. H. Van Dyke and Ferdinand Schlesinger of Milwaukee, directors. Aurora company—Charles L. Colby, Edwin H. Abbott, Colgate Hoyt, W. J. Olcott, Charles H. Ropes, L. H. Severence and Joseph L. Colby, directors. Metropolitan Land and Iron Company—S. S. Curry, president; H. S. Haselton, secretary and assistant treasurer; L. J. Pettit, treasurer. The Norrie, East Norrie and Pabst mines are owned and operated by this latter company. Brotherton company—Joseph Sellwood, president; H. Niedecken, secretary; W. J. Luther, treasurer: Edward Niedecken, H. A. Cooper, W. S. Morton and J. P. Channing, members of the board of directors.

E. P. Allis & Co., Milwaukee, are building a vertical, tandem, compound mine-pump engine for the Chapin mine, Iron Mountain, Mich. The cylinders measure respectively 50 inches and 100 inches, with a stroke of 10 feet. The flywheel is 40 feet in diameter, and weighs 160 tons. The main shaft is 27 inches in diameter and the crank pin 16 inches in diameter. The crank shaft weighs nearly 8 tons. The beam is 32 feet in length from center to center, and weighs 100 tons. The connecting rod is 30 feet in length from center to center, and 15 inches in diameter in the center. This engine is 54 feet in height from bed plate to top of cylinder, and is intended to work a line of 28-inch pumps against 1,500 feet of head.

Losses at the Ludington and Hamilton mines through the great flood of water that has resulted in almost an entire suspense of work for several weeks past are certain to be very great especially on account of the reduction in output during the coming season when some profit is expected in the ore business. Late advices are to the effect that the water has been lowered a few feet at the Ludington, but there is little encouragement in this, when it is known that nearly 2,000,000 gallons of water a day is being removed from the mine by pumps and bailers. Corrigan, Ives & Co. of Cleveland are the shipping agents representing the Hamilton and J H. Outhwaite & Co. represent the Ludington.

It is more than probable that the Brotherton mine, which joins the list of Gogebic range dividend payers with an assurance of 25 cents a share on Feb. 1, and a like amount on April 1, would have paid a dividend last year but for money tied up in ore on dock at Lake Erie ports. The ore on hand Jan. 1, 1891, amounted to 13,015 tons. During the year 1891 67,200 tons were mined, and 48,809 tons shipped, leaving the balance on hand 31,406 tons Jan 1 1892. It is expected that 135,000 tons will be mined this year. The capital stock of the company is 80,000 shares of $25 each par value. The stock is held in the market at about $3.

H. V. Winchell, state geologist of Minnesota, has visited the new Mesaba range recently on business connected with his forthcoming annual report. He says that the average assays of ore from the Vermillion range show 66 per cent. iron and .075 phosphorus, while the average from the Mesaba is 60 per cent. iron and but .04 phosphorus. A combination of the ores, he suggests, would give 63 per cent. iron and .0575 phosphorus, which would be within the Bessemer limit.

Lieut. G. L. Carden is the author of a number of articles descriptive of and highly complimentary to lake ship and engine builders, which have appeared in the New York Times recently. The articles in the Times are written from notes made by Lieut. Carden while on a tour of the lakes in search of information to be furnished Washington authorities.

In General.

Capt. Alexander McDougall: "Our boats were like the dog with a tin kettle attached to its tail. Everybody fired rocks at it. The dog escaped, and so did our boats."

It is reported in Washington that Senator Sherman, who headed the opposition last year to the transfer of the revenue marine from the treasury to the navy department, made certain pledges to the lake citizens of Ohio, who aided him in his re-election to the Senate a few weeks ago, that will prevent any outspoken opposition from him when the bill for the transfer comes up again for consideration. If such is the case it is strange that there has been no report of it in Cleveland.

Although there is no way of obtaining facts on the subject, it is quite certain that fully half the steam pleasure craft built this past year have been furnished with water tube boilers, and this has given a profitable business to the ten or twelve manufacturers of the marine type of water tube boilers in the United States. But the manufacturing of this class of boiler will be limited until it is adopted by the merchant mariner. It is claimed that one lake shipbuilding company is favorably impressed with a certain make and will, as soon as they have time, try the merits of the coming boiler. If it is a success, it will add to the laurels of the concern, which was the pioneer in adopting the independent condenser.

Accounts published recently of the successful testing of the modern high power guns on the United States monitor Miantonomah, have created considerable interest in naval and mechanical engineering circles, especially as this is the first attempt at working the guns on board vessels with the hydraulic pressure system. The hydraulic pressure pumps used on the Miantonomah were built by the George F. Blake Manufacturing Company from special designs. The water pressure these pumps have to contend with is nearly 1,000 pounds per square inch. The Blake hydraulic pressure pumps are also used by the United States ordnance department for working the guns at the testing grounds and at the Washington navy yard gun shop.

A communication elsewhere refers to the death of Henry W. Granger, a marine engineer who died in Detroit a few days ago bereft of the comforts that ability would have given him but for misfortunes. He was born in Chicago and obtained a knowledge of machinery in his father's shop, afterward engaging as a tug engineer and chief engineer of a line of tugs on the Chicago river. He was on the Detroit river during the palmy days of the big lake tugs, and later, upon engaging with the Dry Dock Engine Works of Detroit in 1870, as a machinist and draftsman, he developed a superior knowledge of marine engines. His first designing work of note, referred to in the communication, was, according to an associate engineer who is well acquainted with his early life, accomplished in 1872, when he made a fore-and-aft compound engine of a double high pressure engine of 26-inch cylinders then in the lake tug Champion. A new fore-and-aft compound engine, designed later by Mr. Granger, went into the steamer Thomas W. Palmer.

Fifty Second Congress—First Session.

The following bills of interest to lake vessel owners have been introduced in Congress recently:

H. R. 205, Chipman—To establish telegraph communication between Alpena, Mich., and certain life-saving stations.

H. R. 228, Lind—Granting the consent of Congress to the erection of bridges over navigable rivers, and for other purposes.

H. R. 500, Miller—Appropriating money for the improvement of Fox river in Wisconsin.

H. R. 505, Hangen—To establish a pier light at Bayfield, Wis.

H. R. 535, Covert—To transfer the revenue cutter service from the treasury department to the navy department.

H. R. 542, Breckenridge—To require persons who make their residence on boats on the interior waters of the United States to obtain license, and for other purposes.

H. R. 553, Cummings—Granting pension to certain officers and enlisted men of the life-saving service, and to their widows and minor children. (Mr. Buchanan is credited with introducing a duplicate of this bill).

H. R. 2693, O'Neil—Limiting the operation of certain acts relating to constructions over navigable rivers.

H. R. 2695, Burrows—Making an appropriation for the improvement of St. Joseph harbor. Mich.

H. R. 2697—To establish a life-saving station at or near Saugatuck, Mich.

H. R. 3596, Lynch—To create a port of entry and delivery at the city of Ashland, Wis.

MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

JOHN M. MULROONEY, ... } PROPRIETORS.
F. M. BARTON, ... }

HOMER J. CARR, - - - Associate Editor and Manager Chicago Office, 210 South Water Street.

Published every Thursday at No. 510 Perry-Payne Building, Cleveland, O.

SUBSCRIPTION—$2.00 per year in advance. Convenient binders sent, post paid, 75 cents. Advertising rates on application.

The books of the United States treasury department contain the names of 3,510 vessels, measuring 1,063,063.90 tons in the lake trade. In classification of this fleet the lakes have more steamboats of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The classification is as follows:

Class.	Number.	Tonnage.
Steam vessels	1,527	652,922.25
Sailing vessels	1,272	328,655.96
Canal boats	657	67,574.90
Barges	54	13,910.09
Total	3,510	1,063,063.90

According to the report of William W. Bates, United States commissioner of navigation, 46 per cent. of the new tonnage of the country was built on the lakes during 1889. This is a percentage greater than the work of the Atlantic coast and western rivers combined, and almost equal to the whole work on the Atlantic and Pacific coast. In 1890 the tonnage built on the lakes is but very little less than that built on the Atlantic and Gulf coasts. Tonnage built on the lakes during the past five years was as follows:

	No. of boats.	Net Tonnage.
1886	85	20,400.54
1887	152	56,488.32
1888	222	101,102.87
1889	225	107,080.30
1890	218	108,515.00
Total	902	393,597.03

St. Mary's Falls and Suez canal traffic: Number of boats through St. Mary's Falls canal in 1890, 234 days of navigation, 10,557; tonnage, net registered, 8,454,435. Number of boats through Suez canal during 1890, full year, 3,389; tonnage, net registered, 6,890,014.

Entered at Cleveland Post Office as Second-class Mail Matter.

CARE will be given in the present Congress to the important measures pertaining to the 20 and 21-foot channel project and the St. Mary's Falls canal and Hay lake improvements, but there is one other bill deserving of earnest and united support from representatives of lake districts. It is the bill providing for sundry light-houses and fog signals, introduced in the Senate by Mr. Brice and in the House by Mr. Taylor. There are just two items in the bill, containing a hundred or more, that have not been recommended by either the light-house board or the engineers in charge of lake districts. What better endorsement is needed? The engineers of the several districts have, since the introduction of this bill, been ordered to report upon it, and there is no doubt that they will repeat the recommendations of the past, including also the two items that have not as yet been brought to their attention. Notwithstanding such an endorsement from the light-house board and its engineers, the lakes are to be given only 9 per cent. of the total expenditure for aids to navigation, if the apportionment is to be according to the letter of the secretary of the treasury transmitting estimates to Congress. The unfairness of this division of the proposed appropriations must be brought to the attention of the committees in a forcible way.

THE life-saving service is receiving considerabe attention from the present Congress. Mr. Buchanan and Mr. Cummings both introduced bills providing for pensions to officers and enlisted men of the service and their widows and minor children. The measures are the same in both cases. They provide that every superintendent, keeper or member of a crew disabled by disease or injury incurred while in the actual performance of his duty shall be pensioned under the provisions and limitation of the general pension laws, the rank of superintendant of the service to be equivalent to that of a captain in the navy, and the rank of keeper to be equivalent to that of a seaman in the navy or a private in the army. It is hardly expected that this act will pass the present Congress, although increased agitation of the question of better treatment of men in the service may result in the passage of the act proposing an increase in salaries.

SENATOR MCMILLAN and Congressman Chipman, both of Michigan, have introduced bills to establish telegraphic communication between Alpena, Lake Huron, and the life-saving stations at Middle and Thunder bay islands. The importance of means of communication between shore points and life-saving stations is admitted on all hands, and these representatives in Congress should not stop with the meager provisions of this bill. Along the south shore of Lake Superior there is one of the most dangerous coasts in the whole country, as yet only partially provided with life-saving stations, but it has been repeatedly shown in time of great loss to life and property that communication with these stations would be a great blessing. All of the Lake Superior stations should have telegraphic connections.

THE city of Duluth is preparing plans for a bridge across the canal to Minnesota Point and reports have reached vessel owners at lower lake ports that parties interested in the scheme are planning to make the structure of the high bridge kind, rushing its construction so as to escape any objection that might be made to it under the provisions of the last river and harbor bill which gives to the general government supervision in such matters over the navigable streams of the United States.

Recalling Disasters During the Fall of 1886.

In November, 1886, a great many lives were lost in wrecks along the lakes. The fall gales were unusually severe and among the vessels that went ashore on Lake Superior were the steamer Robert Wallace and consort David Wallace of Lorain, whose crews met with a very serious experience near Marquette, where a life saving station was not established until last season. A writer in the Franklin Institute Journal, calling attention to insufficient appropriations and inadequate pay in the life-saving service, refers to this accident. "Although the scope of a life-saving station's operations is usually limited to a few miles," says the article, "much longer distances are sometimes made. Probably the most remarkable instance ever recorded occurred on Nov. 18, 1886. On the morning of that day, two ghostly figures, proving to be two vessels in distress, were discovered off the town of Marquette, on Lake Superior. There was no life-saving station there, and the people of the vicinity devoted the entire day to every sort of effort to reach the forlorn mariners. Boats and steam tugs were tried, a mortar and life line were invoked. All failed. With the departure of daylight a pall of horror and dismay enveloped the town. The nearest life-saving station was at the ship canal, on Lake Superior, many miles away. Faintly hoping, almost despairing, a telegram was sent stating the appalling facts. A special train was at once ordered at the nearest railway station to the ship canal station, and the crew and apparatus were hastily embarked in the midst of one of the heaviest snow storms of the year. Before midnight the life-savers reached the scene of disaster, and after eight hours of indomitable effort safely landed the two entire crews, twenty-four persons. During that year out of 6,601 lives imperiled only fifty-eight were lost.

Compliment From a High Source.

PUBLISHERS OF MARINE REVIEW;—We highly appreciate the pains you have taken in compiling the statement of "Lake Superior Iron Ore production for 1891, etc.," and would express our thanks for receipt of same as a supplement to a recent issue of the REVIEW. If you have extra copies of this statement to spare I should be glad to have four or five and will promptly remit the price on receipt of bill. C. P. COFFIN, Secy.

Office Minnesota Iron Company,
Chicago, Ill., Jan. 26, 1892.

Excelsior Marine Benevolent Association.

ANNUAL MEETING OF THE GRAND LODGE AT CLEVELAND.

Three days were required to complete the business of the second annual meeting of the grand lodge of the Excelsior Marine Benevolent Association at Cleveland last week. The organization comprises over 800 of the masters of the better class of lake craft. No other organization save the Cleveland Vessel Owners' and Lake Carriers' associations has done more towards the improvement of lake navigation than this organization. In several instances the requests of this body have been recognized by congressional committees who were considering matters pertaining to lake interests. While the association was formed on the principal of beneficence it has extended its influence and usefulness into a wider scope.

Capt. Alex. Clark, grand president, Buffalo, called the lodge to order, Thursday morning in the rooms of the local organization. The presidents and past-presidents of the different associations on the lakes constitute the grand lodge and are the only ones entitled to vote for the grand officers. The members of this grand lodge were: Captains Alex. Clark, Frank Welcome, and E. F. Thorpe, Buffalo; Captains John H. Ivers and Alex. R. Sinclair, Port Huron; Captains John Hogan and George Tebo, Chicago; Captains Edward Kelley, John B. Hall and W. S. Mack, Cleveland; Capt. D. M. Pierce, Bay City; Capt. James Leisk, Milwaukee; Capt. George McCullach, Detroit. The following grand officers were chosen for the ensuing year: Capt. Alex. Clark, president; Capt. J. B. Hall, vice-president; Capt. James Leisk, second vice-president; Capt. Lyman Hunt, treasurer; Capt. W. A. Collier, secretary; Capt. James Hagan, marshall; Capt. D. M. Pierce, warden; Capt. R. Gain, sentinel. An auditing committee examined the books of the financial secretary, Friday, and complimented the work of taking care of the finances. The afternoon was taken up with discussions on the constitution formed at Buffalo last year. Many corrections and additions were made. The installation ceremonies for the grand officers Friday evening were impressive and the exercises required the entire evening. The following rules for navigating narrow channels were prepared by a committee consisting of Captains Mack, McCullach, Leisk, Pierce, Sinclair and Tebo: "That in going through narrow channels or shoal water, boats meeting head and head, the descending boat shall have the right of way; that the ascending boat shall on all occasions check and if necessary stop, especially when signaled to do so by the usual check whistle of the descending boat. Bar point, Limekiln crossing, Grosse point, St. Clair cut, Sailors' Encampment, foot of Sugar island, Neebish cut, Lake George flats, and especially Collision Bend, Squirrel island, Topsail island and Vidal shoal are among the most dangerous passing points. In all cases where passing boats are going the same way, especially tows, they should check as slowly as possible in passing the boat, or boats being passed should check so as to allow the faster boat to pass as quickly and safely as possible." After discussion they were adopted and will be read to new members by the presidents of the different associations. The next annual meeting of the grand lodge will be held at Port Huron.

The social side of the association was displayed in the banquet and ball held at the Red Cross armory, which was decorated lavishly, the pennants of the different lodges showing to advantage. The committees on arrangements, reception, decoration, banquet and ball all deserve mention for the well-planned entertainment of the visiting members. It can all be summed up by saying it was the social event of the season in vessel circles.

Capt. James Carter has been balloted for and accepted by the Port Huron lodge, and there are several additional applications for membership.

The cost of railroads in the United States has been nine billion dollars.

More Contracts for Lighting Plants.

The monster freight steamers under construction at the yards of the Globe Iron Works Company, Cleveland, and the Chicago Ship Building Company, Chicago, for the Minnesota Steamship Company, will be equipped with an electric lighting plant by the Fisher Electric Company, Detroit, Mich. Each boat will be furnished with a 225-light automatic dynamo, a complete set of electric light fixtures, a five circuit switch board, automatic signal alarm for signal lights and two arc lamps for lighting main decks and dock. They will also be supplied with a complete set of portable incandescent lamps, with necessary attaching plugs. The berths in officer's quarters and private state rooms will be furnished with adjustable reading lamps and all fixtures will be oxidized silver or bronze. The lighting of the engine room will be very complete, enabling the engineer to observe every part of the machinery from the working platform. Power will be supplied by an automatic Rice engine.

Auxiliary Machinery and Fit-Out of the Wadena.

No expense was spared in building and equipping the steel yacht, illustrated in this issue, with the latest improvements in all parts. Mr. Wade's orders were to spare no expense in this line and the fact that the device or appliance went into this yacht is certainly a valuable endorsement. Some of the more important parts are given below with name of manufacturer: Electric lighting plant, The Central Thomson-Houston Co., Cincinnati, O; binnacles, compasses, chronometers, barometers, charts etc., John Bliss & Co., New York; ice manufacturing plant H. B. Roelker, New York; evaporator and distilling plant, Baird, New York; independent air pump, Blake & Knowles, New York; crank-pin lubricators, O'Connell & Cahill, Manistee, Mich.; Manganese bronze for propeller wheel, Cowles Electric Smelting and Aluminum Co., Lockport, N. Y.; blocks etc., W. H. McMillan's Son, 113 South street, New York, N. Y.; cabin work and finishing, McAllister & Dall, Cleveland; night signals, Coston Light, Pearl street, New York.

Miscellaneous Notes.

Wrecker Reid's tug Sea Gull, which started from Bay City about Christmas time to release the schooner Minnehaha, ashore at Detour, has since been frozen up in Saginaw bay. Reid was to have released the Minnehaha by April 1 for a stated price, from which a certain sum is to be deducted for every day's delay after that date.

Bids were opened in Washington, Saturday, for the construction of a revenue cutter to be named the Hudson. A telegram says that John H. Dialogue of Camden will probably be given the contract, although the bid of the Craig Ship Building Company of Toledo, was very close to that of Mr. Dialogue. The boat is for the coast service and is 94 feet long.

At a preliminary meeting held in Detroit a few days ago for the purpose of forming an association of tugs operating on the Detroit, St. Clair, Saginaw, and Sault rivers there were present S. B. Grummond, J. & T. Hurley and Elsey & King of Detroit, Henry Howard, A. D. Bennett and C D. Thompson of Port Huron and J. & T. Charlton and J. S. Bliss of Tonawanda. The aim is to do away with the competition that now causes vessels to be towed from Lake Erie ports through to Lake Michigan. Other meetings will be held.

H. J. Webb & Co. of Cleveland, have purchased from A. E. Stewart and others of Detroit the tow barge John J. Barlum for $57,500. The Barlum is a wooden schooner, steel strapped, launched at Toledo by the Craig Ship Building Company last spring. She registers 1,125 tons, can carry 1,800 tons of coal, isvalued at $55,000 in Lloyds andrates A1*. Thomas Murphy of Cleveland has purchased the schooner R. Hallaran from Mrs. Hallaran of Toledo for $18,000 cash. The boat carries about 54,000 bushels of grain, and was built in 1880 and rates A2.

The general offices of the N. Y., C. & St. L. R. R. Co., formally occupying the Hoyt block, corner of Bank and St. Clair Streets, Cleveland, will on and after Monday Jan. 25, 1892, occupy the fourth and fifth floors of the Hickox block, northwest corner of Euclid Avenue, and Erie Street. Temporary entrance, north end of building on Erie Street. Jan. 28.

Deep Water Navigation Through the Lakes and to the Sea.

[By the Hon. Wm. W. Bates, Commissioner of the Bureau of Navigation, Treasury Department, Washington.*]

It is now forty-six years since I first saw the city of Detroit, and first took part in building vessels for the navigation of the lakes. At that time 8,000 bushels of wheat was the standard bulk of cargo, and 3 cents a bushel the minimum rate of freight from Toledo to Buffalo. In the winter of 1846 the first three-mast schooner to carry 12,000 bushels was built at Black River, Ohio. Her size was the talk of the mariners. In that day 8 feet of channel or harbor depth was deep water. Thirty-eight years ago I built a barkentine for the Chicago and Buffalo grain trade to carry 13,000 bushels on a draught of 9 feet, that being the depth over the St. Clair Flats. Freights were then too low for profit at less than 10 cents a bushel, simply because vessels were obliged to be built so small.

For more than forty years it has been the experience of lake navigation that many of the natural channels, and all the artificial, have been too shallow for the size of craft required for economical transportation. It has cost the country something to improve our lake navigation, and to obtain the depth of 14 to 16 feet now in use, but it has cost the farmers of the great northwest a hundred-fold in the lower prices for their products, because lake vessels could not be built large enough to do their work economically. And in behalf of my brother shipbuilders, I will make this assertion: There is nowhere in the world a higher skill or a better judgement in proportioning and modeling vessels to carry great loads on light draught of water, than on these lakes; and this has been the case for forty years past. It is not their fault in the least degree that lake transportation cost too much for so many years. It is the fault alone of a mistaken idea of the expenditure of public money.

That a true national economy points to the improvement and especially the deepening and widening of all inter-state and international waterways, needs no argument to commercial men; but, unforunately, the general public of this vast country of ours is hard to reach, and to convince of the necessity for appropriations, sometimes, even for the most pressing purposes. Public meetings and conventions can alone move the country for vast improvements like these of enlarged waterways, or ship-canals. Twenty-eight years ago a National Ship Canal Convention was held at Chicago, the special object being to advocate the enlargement of the channels then existing between the lakes and the Atlantic, by the way of the Mississippi. From that time down to the present, much has been said and done towards this project. Our ablest engineers have discussed it thoroughly. Some of them have advised an eastern exit to the sea, by way of the St. Lawrence. In the transactions of the Canadian Society of Civil Engineers, a most able and exhaustive paper will be found by Mr. E. L. Corthell, of Chicago, advocating this route. Other engineers have proposed the enlargement of the Erie to a ship-canal, but I will not discuss the the question of route, preferring to leave that to the engineers, with a single condition which is, that it be located in and through our own territory, to be used by American vessels only.

Deep water navigation through the lakes and to the sea is an improvement of national importance and utility. As such it deserves popular consideration. The fact that the ship-building resources at the command of the government in making preparation for war, or in times of hostilities with a foreign nation, would be greatly increased by a lake and ocean canal is sufficient of itself to warrant its building. While our successful defence might not depend upon it, great sacrfiices of time and money, and of precious life, might be saved by employing all our yards and shops. On these lakes there are fully as many first-class establishments for building and repairing iron and steel vessels as on the seaboard of the Atlantic coast.

Then, there is the further fact that the building and repairing of naval vessels, whether fighting or transport, would be much cheaper done at all times; first, by reason of the added competition, and second by and through the difference in the cost of materials and labor. The fact that lake shipbuilders can out-bid the coast, was practically shown the past year in the various biddings for government work, of which there was considerable for the light-house board; and in the case of a vessel to be built for the navy, a lake firm put in the lowest bid. These facts signify much. They show that the time has come when the government itself is interested pecuniarily in the great improvements which we advocate.

There is yet another reason why the government is interested in a ship-canal and deep water lake navigation. These improvements, the canal being through our own territory, would put the United States as a naval power on the lakes, on an equal footing with Great Britain, whose armed vessels can be sent here in any number up the St. Lawrence and through the Welland canal, to destroy our valuable shipping and put our lake ports under war contributions. If our government had a navy to spare for the defence of our lake interests we could then get it from salt to fresh water, perhaps in time and with sufficient force to repeat Perry's victory. It could scarcely have been the logical result of that fight, that our government in 1817 proposed to the British ministry the unfortified and defenceless condition, in which we now find ourselves, without a naval force on these lakes to protect our marine, and bound by treaty not to build nor arm here the vessels necessary to oppose the fleets that may be sent freely by Great Britain. Viewed in this light a ship-canal means lake defence. But there is another view in which the national interest appears. A deep waterway through and from the lakes to the sea would remove an obstruction now preventing the enterprising and energetie people of this region from the application of their resources in building and running vessels in the foreign trade. The shipbuilding and freight-carrying business of these lakes if not already, soon will be overdone and the whole country would be benefited if this pent-up power could find a new field for life and activity. New blood in the ocean transportation business is badly needed. I know of no place whence it could be obtained so well as from these lakes. Here we have the courage, the skill and the energy that have made the west the foremost business section of the United States. Here is where the young men of the nation have had a chance, and have shown to the world what that means in a free republic. Here is the place to build ships for a foreign trade, to own them and to run them from our elevators and our warehouse docks to and from all parts of the world. Deep water navigation between the sea and these lakes, through our own territory, confined to our own flag as it should be, would go far towards the solution of the shipping problem. It would immensely increase our naval power, and raise our national rank. It would vastly enlarge and fortify our commercial credit. It would assure always a favorable balance of foreign trade. It would give the young men of our country another chance. They would go forth to sea, and devise new methods of doing the business of the world. Their enterprises and successes would be cheap to our nation at the cost of the improvements necessary to be made. These thoughts are not merely speculative. While the Farquhar tonnage bill had a prospect of passage, last winter, there were several parties from lakes on business excursions through our southern Atlantic and Gulf cities, looking up points and places for operations and adventures in the ocean trade and transportation. Although they, and perhaps all of us, were disappointed in the action of Congress, their interest in the opportunity pending proved that the lake people will respond promptly to the call of their country, if protection shall again be extended to our marine in foreign trade, or if a national ship-canal shall be joined with deep water lake navigation, as we hope one day it will be. I would like to add one more word in explanation of the advantage of locating a ship-canal in our own territory, and confining transportation through it to our own vessels. The object is to do more work upon, and receive more money for our products sold abroad. A dollar earned by transportation is just as good as one received for growing grain. By sending our exports to market in our own ships, we would receive for the service the ten, fifteen or twenty per cent. of their value now added for freight, but which is now earned and received by foreign shipping. The work of the foreign ships brings us into debt abroad, whereas the work of our own marine would keep us out of debt and keep our gold at home. Here is a simple problem that will illustrate the functions of a ship employed in foreign traffic:

There is a cargo in New York and another in Liverpool, each valued at $100,000. Freight is the same both ways. An American steamer takes our cargo to Liverpool, and a British ship brings the British cargo to New York. We build, equip, man, provision, insure and run onr own vesssl, and the British do the like by theirs. We do the banking, commission and insurance on our own cargo, and the British do the same for

theirs. There is a fair exchange of goods and of services, and the balance of trade is even between the two countries. Now suppose that a British steamer carries both cargoes. The freight is equivalent to 20 per cent. of value in each case. The banking, insurance and other expenses are 5 per cent. Then the British account will stand:

One cargo	$100,000
Freight on two cargoes	40,000
Insurance, etc., two cargoes	10,000
Total British credit	$150,000

The American account will stand:

One cargo	$100,000
Adverse balance of trade	50,000
Amount of credit and debt	$150,000

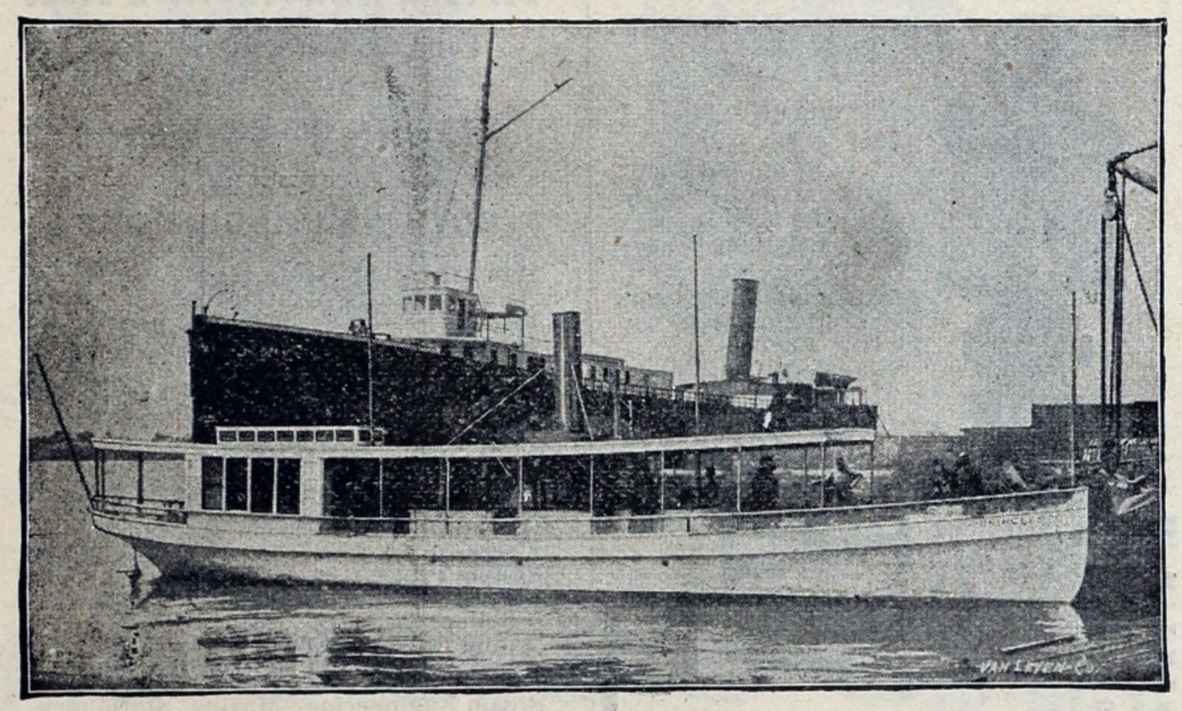
From these transactions it is easily seen that an adverse balance of foreign trade may be due, and in our case is really due, whenever it occurs, not to a lack of exports made abroad, but to want of shipping of our own to carry what we send. We are actually paying to foreign shipping every year a sum as large as that collected at the custom houses. The only fear of our commercial men is the export of gold to balance our foreign trade. If we had transportation in proportion to exportation, the work of our marine would keep our gold at home. We would not need to fear a silver currency then We would then have safety in our own foreign trade, and foreign trade enough to satisfy us all.

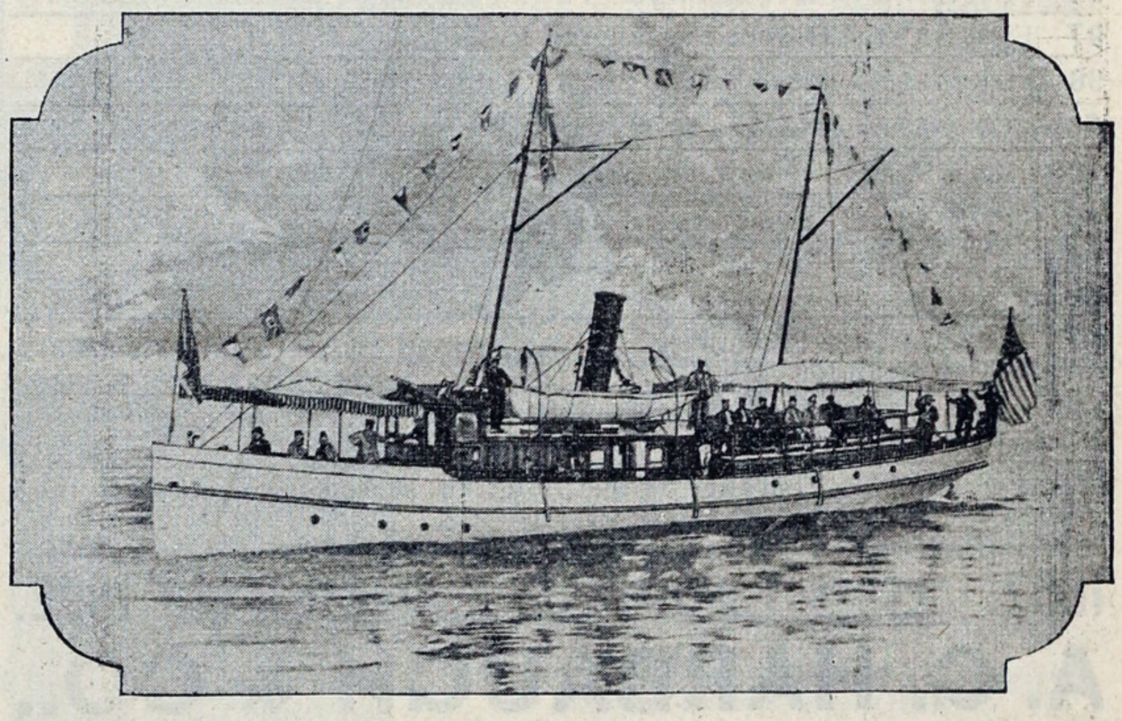
* Proceedings of the Detroit Deep Waterways Convention.

printed recently in the New York Times, the establishment of Wickes Brothers, Saginaw, is described at great length. Lieut. Cardon has been writing with a view of calling attention to the ability of lake concerns to undertake government work, and he speaks of Wickes Brothers' plant as one of the largest boiler works in the country.

Since purchasing the propeller De Pere, a boat especially adapted to shore business, on account of comfortable cabins, large freight capacity and light draft, S. B. Grummond of Detroit announces that tri-weekly service will be given in the future in connection with the steamers Flora and Atlantic, running from Cleveland, Toledo and Detroit to Mackinaw and intermediate ports. The De Pere's light draft will enable her to make all shore landings going and returning without difficulty.

According to the annual report of the Saginaw board of trade, the output of lumber from the entire Saginaw valley during the year ending Dec. 1, 1891, was 758,619,548, and stocks on hand Dec. 1, 1891, aggregated 342,178,705 feet. This is a decrease in production of 56,443,917 feet as compared with 1890 and 93,212,585 feet as compared with 1889. The lumber sold but still on dock Dec. 1, 1891, amounted to 70,204.765 feet as compared with 63,267,635 feet the corresponding date in 1890 when stocks on dock were about the same. During 1891 there were 153,807,800 pieces of lath made on the river as against 129,731,800 in 1890 and 135,194,240 in 1889. The total amount of shingles manufactured was 222,607,250, as against 221,839,000 in 1890 and 220,786,250 in 1889.





TWO PRETTY STEAM YACHTS, BUILT BY THE DETROIT BOAT WORKS, DETROIT, MICH.

Around the Lakes.

W. G. McCartney has been appointed deputy collector of customs at Ashtabula Harbor to fill the vacancy caused by the death of M. B. Gary.

Buffalo tug men are interested in the formation of an association of harbor tug pilots. Captains J. R. Glover, John Farrell and Joseph Dawson are leaders in the movement.

G. K. Jackson of Bay City has sold the barge Montgomery to H. M. Loud & Sons of Oscoda. The price is reported at $10,000. The boat had a capacity of about 850,000 feet of lumber.

The steamer George T. Hope, at Chicago, is receiving a Globe steam steerer and is being caulked outside. Capt. N. B. Nelson, who is looking after the work, will command the Hope again next season.

Hayes, Heine & Stack, of No. 70 East River Street, Cleveland, are manufacturers who make a specialty of supplying vessels with mattresses and all kinds of bedding. They are favored with a very large portion of the best trade in Cleveland as well as in other ports thoughout the lakes.

A. K. McRae of Pittsburgh is negotiating with steamboat lines running between Chicago, Buffalo and Ogdensburg for contracts to handle all package freight with men independent of the unions. He proposes to build a hotel costing about $40,000 in the vicinity of the docks and otherwise provide for the care and protection of about 2,000 men engaged in this work.

In one of the several articles from Lieut. G. L. Carden,

The Coming War Ship.

The New York Tribune discusses in a humorous vein the announcement made recently in the MARINE REVIEW of Capt. McDougall's plans for enlisting the whalebacks in coast defense service: "Seriously speaking," says the Tribune, "it seems to us that there may be a great deal in this whaleback idea. But perhaps it does not go far enough. Why should not the whaleback disappear entirely under the water? Nothing could disconcert the enemy more. after watching a whaleback approach and getting ready to shoot it, than to suddenly see its stern fly up in the air and the whole thing dive down into the ocean like a duck, leaving only a smooth, blank place on the water. But what would be the emotion of the enemy, a moment later, when the whaleback stuck its beak through his bottom? The builder of war whalebacks must introduce more of the duck idea into his craft. If a little disappearance is a good thing, more of it is better. Some day we shall have whalebacks in our navy, that, being hard pressed in shallow water where they can't dive, will spread their wings and get up out of the water and fly away, with loud and defiant quacks from a steam quacker; but these are not for this century. But what we want now and must have are whalebacks which can at least dive out of sight, ram the enemy while below the surface and come up with the water running off their backs and with the enemy's furnace doors in their bills. Again seriously speaking—very seriously this time—it would not surprise us in the least if whaleback battleships were yet built. There was Ericsson's monitor, and that silences all positive adverse predictions."

MAGNESIA STEAM PIPE and BOILER COVERING.

IS ON NEARLY **300** STEAM VESSELS.

SECTIONAL, BLOCK and PLASTIC FORM.

Address, **MACAN & CO.**, 237 Bank Street, CLEVELAND, OHIO.

VESSEL AND MACHINERY EXCHANGE.

Space under this heading may be used gratis by our advertisers or subscribers to call attention to vessels or any craft, machinery, new or second hand, that they may have for sale. Those wanting machinery of any kind, or wishing to purchase vessels, are invited to take advantage of the same offer. Each item will be limited to three lines. Letters concerning same must mention number attached to item and be addressed MARINE REVIEW, 510 Perry-Payne Building, Cleveland. O.

87—FOR SALE—5¼x3½x6 Boiler feed pump.

88—FOR SALE—Steambarge, A2 rating, and of 18,000 bushels grain, or 375,000 feet of lumber capacity. Will sell half or entire boat;

89—FOR SALE—Cheap, two 18x20 marine engines complete with outboard shafts, wheels, driving bearings, stern bearings, steam pipes and oil cups, all in good condition.

90—FOR SALE—Two Roberts Water Tube Safety Boilers 5 feet by 7 feet. In use about six months.

91—FOR SALE—Lumber schooner, B1 and carries 280 M.

92—FOR SALE CHEAP—Small ferry steamer.

93—WANTED—To trade, 2 or three fishing tugs for steambarge that will carry 200,000 to 400,000 lumber.

94—One-half interest of the barge Montgomery for sale at a sacrifice. Must be sold within ten days.

95—WANTED—Good fish tug.

96—FOR SALE—Steel steam yacht Straightaway, 90 ft. over all, engine 9x18.

97—FOR SALE—Harbor tug, engine 18 x 20.

98—FOR SALE—Steambarge, 275 M. lumber carrier.

99—FOR SALE—Two 450 M. lumber schooners.

100—FOR SALE—70-foot fish tug.

101—FOR SALE—Small steambarge for $4,000.

102—WANTED—For cash, schooner of from 500 to 700 tons capacity; B1 or lower class.

103—FOR SALE—Steambarge of 450 tons or 275 M. lumber capacity; rates B.1½; cheap for cash.

104—FOR SALE—Excursion steamer, 115 feet long; compound engine; allowed 500 passengers.

105—FOR SALE—Fish tug, 50 feet long; in service two years; engine 8 x10.

1867. PERFECT SATISFACTION GUARANTEED. 1892.

A. G. HARBAUGH & CO.,

34 & 36 River Street, CLEVELAND, O.

Manufacturers of Strictly Pure and Acidless Lard Oils, specially adapted for Steamboat use.

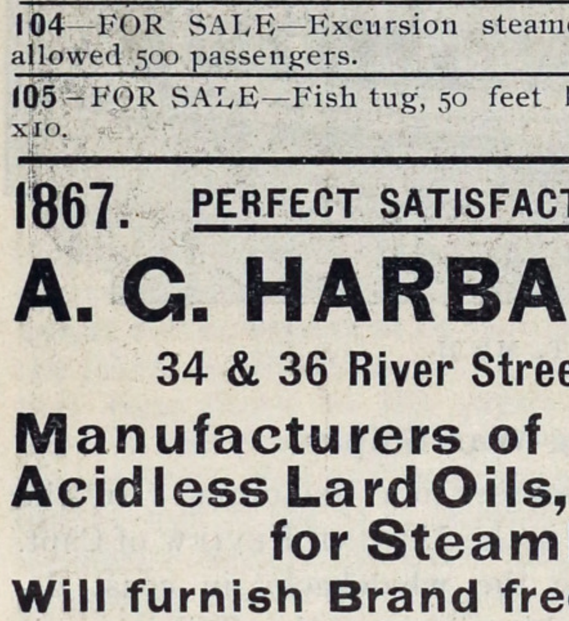
Will furnish Brand free for Ship Chandlers or other dealers who desire their name and address on packages.

H. G. TROUT,
KING IRON WORKS,

BUFFALO, N. Y.,

MANUFACTURERS OF

TRIPLE EXPANSION, THREE CYLINDER, FORE AND AFT And STEEPLE COMPOUND MARINE ENGINES,



High and Low Pressure Engines, Sectional, Propeller, Tug and Yacht Wheels.

Cowles Aluminum and Manganese Bronze Propeller Wheels.

These Wheels are noted for their extra speed, towing power and proportionate saving of coal.

PRICES QUOTED ON APPLICATION.

WANTED TO CHARTER

For Service about May 15th, a

Passenger Steamer,

To accommodate 30 or 40 male passengers, for a number of trips lasting about a week each.

Apply or address: **MARINE REVIEW,** 510 Perry-Payne Bldg., Cleveland, O.

SCHOONERS for SALE.

The Schooner Wyandotte, rates A2, carries 450 M lumber,
Also, Schooner H. C. Sprague, carries 450 to 500 M lumber,
Both light draught.
Also, Schooner William Case, carries 350 M lumber.
Everything about these boats is in first-class condition.

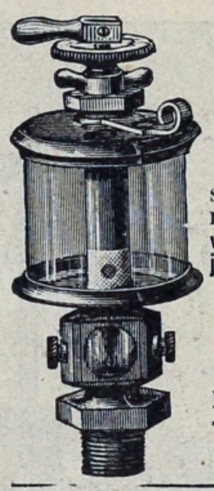
Address, **BILLS & KOCH, Toledo, Ohio.**

FOR SALE—FINE EXCURSION BOAT.

115 feet long, 26 feet beam, 7½ feet draft, compound engines; will guarantee to run 200 miles with five (5) tons of coal; allowed 500 passengers; WILL SELL CHEAP; EASY TERMS; Owner going out of business.

8 **Address, No. 104, MARINE REVIEW, Cleveland, O.**

Powell's Signal Oilers.



INCOMPARABLE FOR ENGINES AND DYNAMOS.

Convenient to fill.
Easy to regulate.
Flow of oil can be instantly shut off by simply moving the lever down—**without disturbing the adjustment.**

Also made Double and Triple Sight feed for Marine Engines.

Your dealer can supply you. Manufactured by

The Wm. Powell Co.,
CINCINNATI, O.

FOR YACHTS.

Our Patent Boiler will give dry steam; will carry a steady water-line; will raise **One Hundred** pounds of steam in one-half the time ordinary boilers require. See what experts say:

"Perfect circulation and dry steam."—*Prof. R. H. Thurston.* "Would not do without your improvement in a boat boiler."—*Herman Westinghouse.*

A Working Glass Model may be seen at 45 Dey St., New York City.

B. W. PAYNE & SONS, Elmira, N. Y.

POPULAR and INSTRUCTIVE BOOKS

For Engineers and Firemen,

—BY—

STEPHEN ROPER, Engineer.

ROPER'S HAND BOOKS.

Hand-Book of Land and Marine Engines	$3 50
Engineers' Handy Book	3 50
Hand-Book of Modern Steam Fire Engines	3 50
Hand-Book of the Locomotive	2 50
Instructions and Suggestions for Engineers and Firemen	2 00
Use and Abuse of the Steam Boiler	2 00
Catechism of High Pressure Steam Engines	2 00
Questions and Answers for Engineers	3 00
Simple Process	50
Care and Management of the Steam Boiler	2 00
Young Engineers' Own Book	3 00

These books embrace all branches of Steam Engineering—Marine, Stationary, Locomotive and Fire. Any engineer who wishes to be well informed in all the duties of his calling should provide himself with a full set. They are the only books of the kind ever published in this country, and they are so plain that any engineer or fireman that can read, can easily understand them.

Any of the above books will be sent to any part of the United States or Canada on receipt of list price.

Send money in Registered Letter, P. O. Order or Postal Note.

EDWARD MEEKS, Publisher,
No. 1012 Walnut St, PHILADELPHIA, PA.

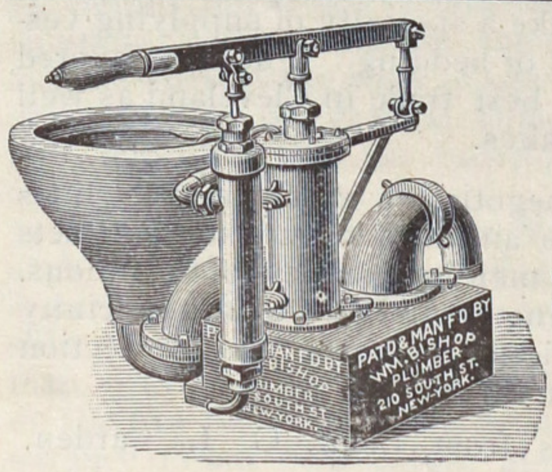
I. H. OWEN, PRESIDENT, Chicago. F. H. VAN CLEVE, SEC. Escanaba. CAPT. GEO. BARTLEY, SUPT. Escanaba.

ESCANABA TOWING & WRECKING CO., Escanaba, Mich.

Tugs, Lighters, Steam Pumps, Hawsers, Hydraulic Jacks and Diving Appliances always ready.

TUG MONARCH, Engine Compound, Cylinder 16 and 30 inches diameter, 30 inch. Stroke, Steam Pressure Allowed, 125 pounds.
TUG DELTA, Cylinder 20 by 22, Steam Pressure Allowed, 105 pounds.
TUG OWEN, Cylinder 20 by 20, Steam Pressure Allowed, 104 pounds.

CENTRIFUGAL PUMPS, Seven and Fourteen Inch Suction.



Combination Pump and Water Closet

For above or below water line.
No valves or cocks to turn on or off.

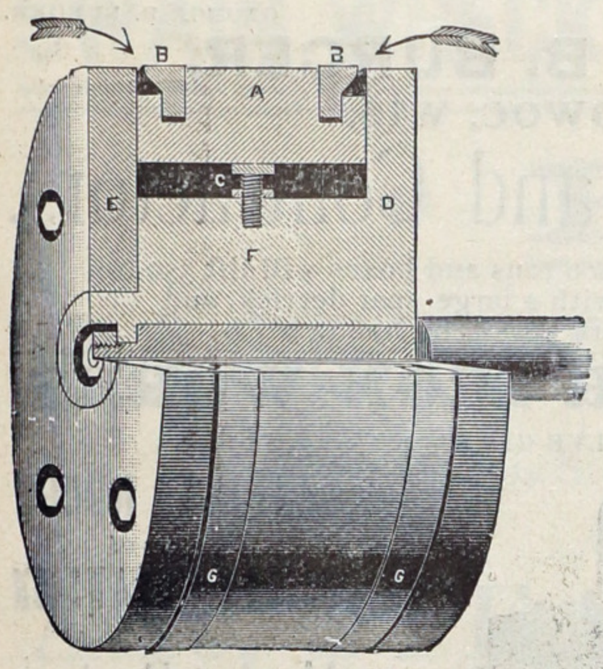
WILLIAM BISHOP,

Plumber, Coppersmith and Steam Fitter,

210 South Street, NEW YORK.

Telephone Call, 4811 Cortlandt.

YACHT PLUMBING A SPECIALTY.



ST. JOHN CYLINDER PACKING CO.

Manufacture a PACKING specially adapted to all classes and sizes of

MARINE, LAND and LOCOMOTIVE ENGINES,

Air Compressors, Water, Oil and Ammonia Pumps.

Ensures Perfectly Tight Piston with Minimum Friction and is Self-Adjusting.

It Increases the Power of Engines TEN PER CENT. and saves Fuel, Oil and Cost of Repairs.

IT WEARS THE CYLINDER ROUND AND TRUE AND RENDERS REBORING UNNECESSARY.

Highest and only awards International Exhibitions, Edinburgh and London, 1890. Special Medal of Superiority, American Institute, New York, 1888 and 1889 ; Massachusetts Charitable Mechanics Association, Boston, 1890.

☞SEND FOR DESCRIPTIVE CIRCULARS AND PRICE LIST.

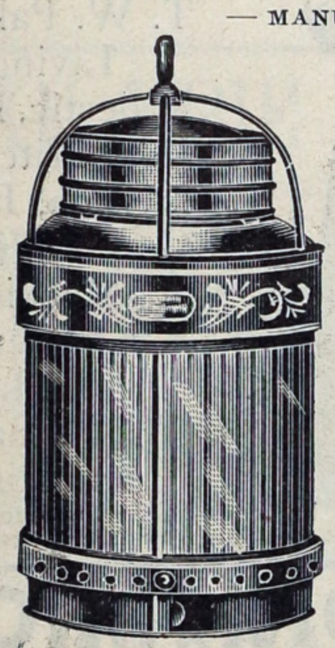
D. DeKREMEN, Sales Agent, 280 Broadway, New York.

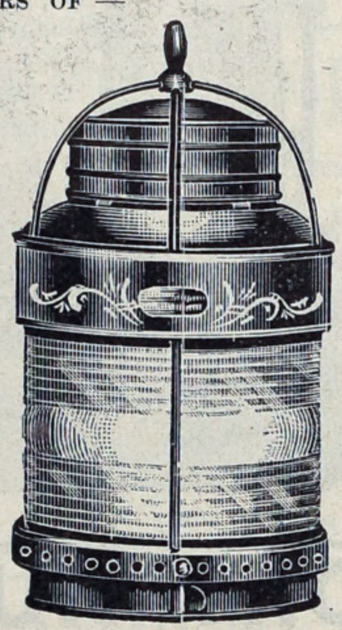
McBEAN, EDGE & CO.,

Steamboat Sheet Iron, Tin and Copper Workers,

— MANUFACTURERS OF —

SIGNAL





LAMPS

With patent lenses, fluted or corrugated, with corrugations inside or out.

STEEL RANGES for Steamboats and Hotels.

HEAD LIGHTS, ENGINEERS' SUPPLIES,

Anchor and Binnacle Lamps; Square, Triangle and Canalboat Head-Lights; Torches, Coal Oil Lamps, Lanterns, Chimneys, Wicks, &c.

Telephone 803. 33 Main St., BUFFALO, N.Y.

SAMUEL WOODHOUSE,

(Successor to Ohio Chain Co.)

Manufacturer of Crane, Cable, Dredge and Crown Proof

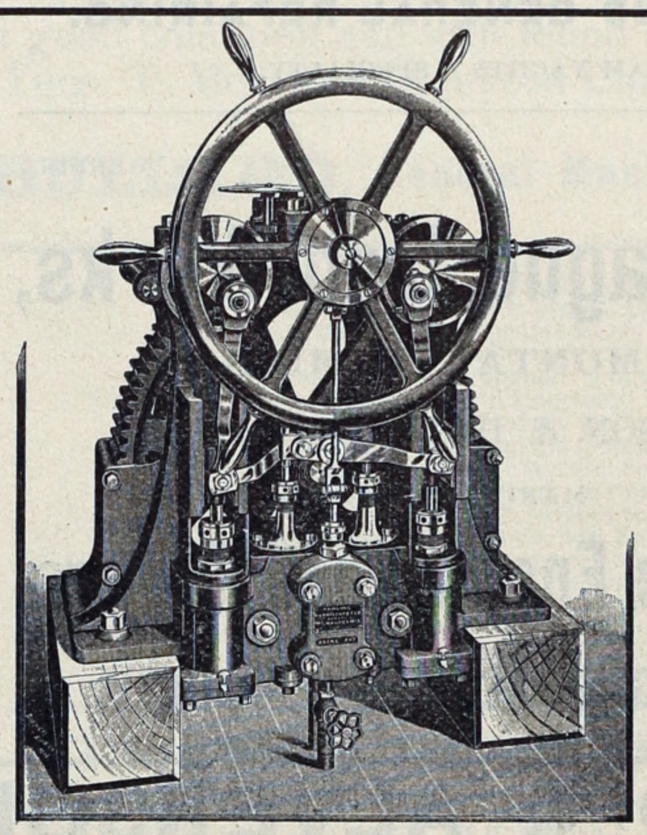
COIL CHAINS, SAFETY CHAINS

AND **COAL MINE CHAINS MADE TO ORDER.**

Chains of Every Description Made to Fit any Wheel or Machine. First Premium, Siver Medal, awarded at Northern Ohio Fairs of 1870, 1872 and 1873.

OFFICE and WORKS, NEWBURGH, O.

The MARINE REVIEW and the MARINE ENGINEER, London, one year for $4. Write the MARINE REVIEW.



No. 4 BECK

Steam Steering Gear.

TUG PATTERN—Floor Space 18x36 In.

Changed from steam to hand gear instantly. Rudder moved hard-over, through one or more turns of wheel as desired. Is self-locking. Will cushion any blow on rudder and return to position automatically All gears are machine cut. Position of Rudder shown by Indicator at all times.

PAWLING & HARNISCHFEGER,

BUILDERS OF

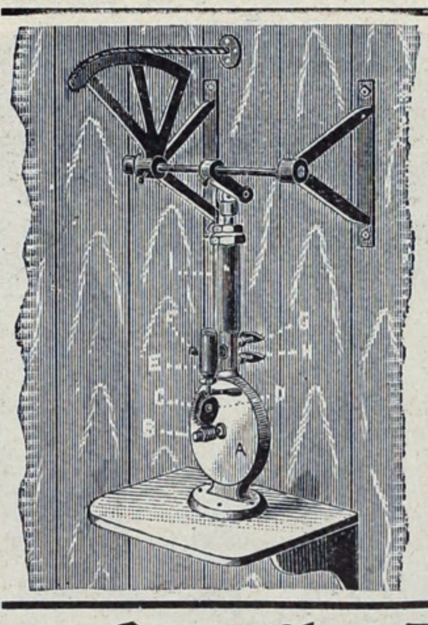
Beck Duplex Feed Engines,

Steam Steering Gears and Hoisting Engines,

Electric, Steam and Hand Cranes,

Special Machinery and Tools.

156-168 Clinton St. Milwaukee, Wis.



RYMER'S

Code and Fog Whistle Operator

Can be placed on a bracket in pilot house.

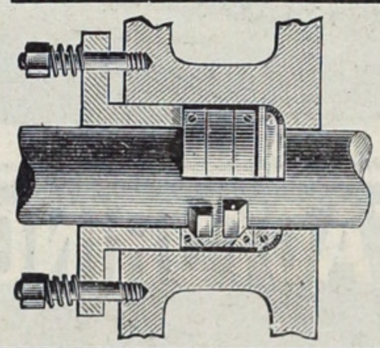
Operation as a fog whistle does not interfere with its use as a code signal.

WM. RYMER,

Agent and Manufacturer,

395 Champlain St., DETROIT, MICH.

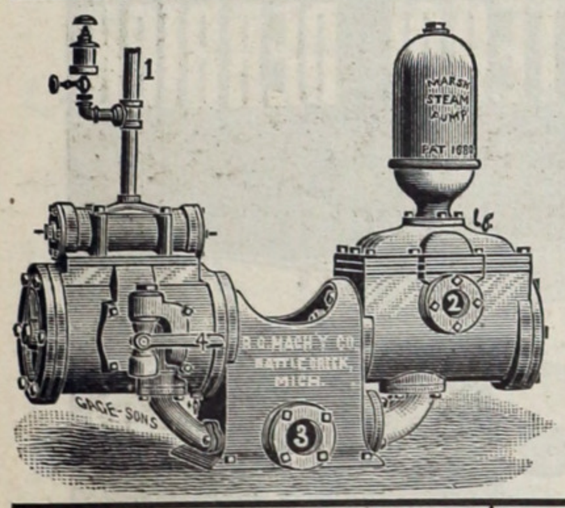
Correspondence Solicited.



Forrest's Silver Bronze Packing.

Applied to any stuffing box, without disconnecting. Steam, air and water tight without soft packing, under the highest steam pressure and piston velocity, non-corrosive, automatic, cannot get out of order, admits of excessive vibrations of rods, does not bind, economical, satisfactory, **guaranteed** to last 2 to 10 years with no attention. Will pack engines by the year. Used on the best steamers in New York Harbor. References.

115 Liberty Street, New York.



MARSH STEAM PUMP,

Absolute Actuation and Regulation Without Use of Tappets, Levers or other Mechanical Connections.

FOR MARINE AND STATIONARY BOILERS.

Smaller Sizes With or Without Hand Pumping Attachment.

Exhaust Returned to Boiler. Heats Feed Water Forty to Fifty Degrees, according to tests made by Prof. M. E. Cooley, of the University of Michigan.

Steam Valves Actuated by Direct Boiler Pressure.

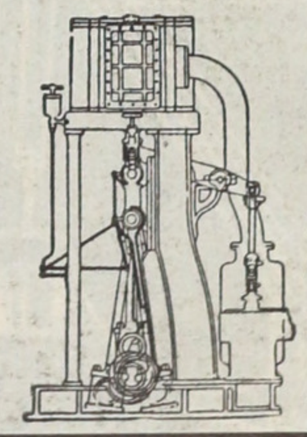
Has Fewer Wearing Parts than ANY OTHER Steam Pump.

For Circulars and Prices, address

STRONG, CARLISLE & TURNEY, Cleveland, O. STANNARD & DILLON, Chicago, Ill.
DETROIT SHEET METAL & BRASS WORKS, Detroit, Mich. H. P. TOBEY, Toledo, O.
SMALLEY BROS. & CO., Bay City, Mich. CARLETON & COLE, Port Huron, Mich.
or BATTLE CREEK MACHINERY CO., Manufacturers, Battle Creek, Mich

---

THE O'CONNELL GREASER,



During the past three years hundreds of marine engines of from 2,000 to 4,000 h. p. have been served, as well as high speed electric light engines.

RESULTS:

Sure control of Crank Pin.

Stoppage of Lard Oil account.

Perfectly clean Engine

O'Connell & Cahill,

Manistee, Mich.

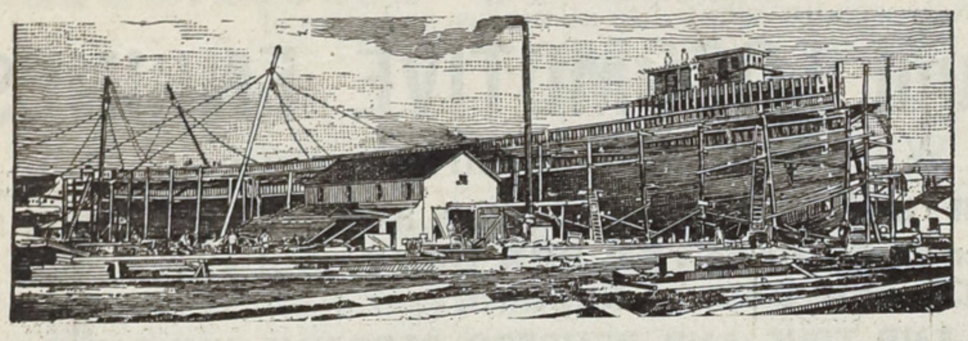
Dark lines indicate apparatus.

Patterson's Nautical Dictionary, $5.00. Order from the Marine Review, Cleveland, O.

CON. STARKE. JOS. WOLTER. AUG. RIEBOLDT.

RIEBOLDT, WOLTER & CO.,

SHIPBUILDERS,



SHEBOYGAN, WIS.

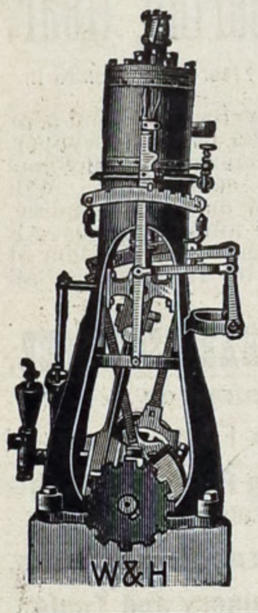
FLOATING DRY DOCK WILL LIFT VESSELS OF 400 TONS.

H. D. ROOT, Lorain, O.

Established 1853.

SHIPBUILDING AND GENERAL REPAIRING.

TUGS AND STEAM YACHTS A SPECIALTY.



J. D. WILSON. M. HENDRIE.

Montague Iron Works,

MONTAGUE, MICH.

WILSON & HENDRIE, Proprietors.

MANUFACTURERS OF

Marine Engines and Boilers,

AND GENERAL MILL MACHINERY.

HENRY B. BURGER. GEORGE B. BURGER.

H. B. & G. B. BURGER,

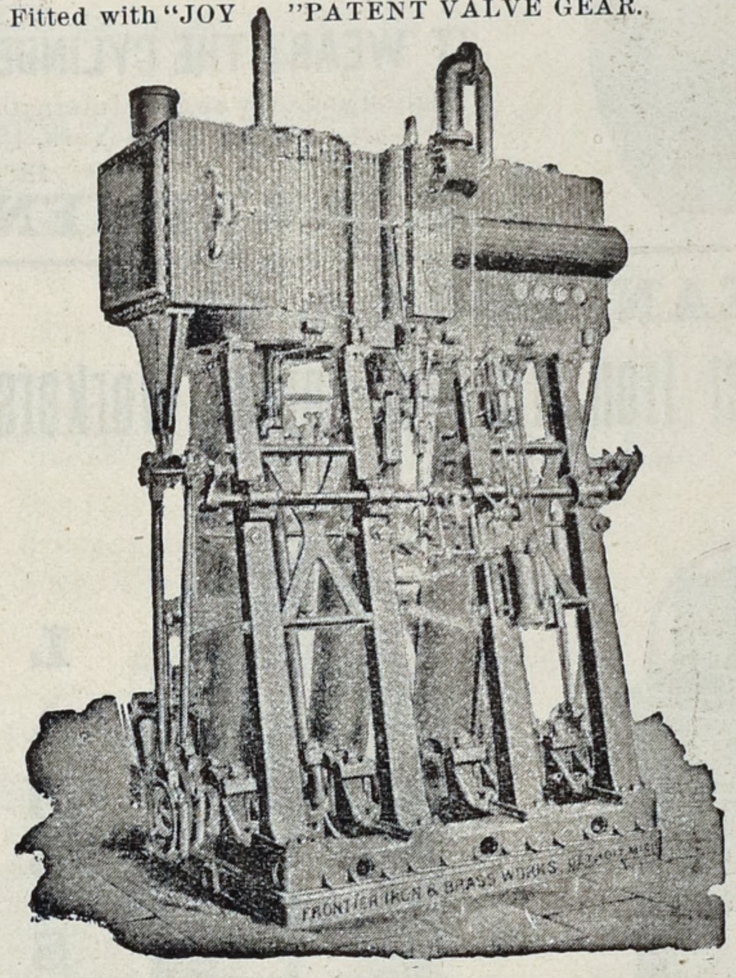
MANITOWOC, WIS.

Ship Builders and Contractors.

Dock will admit vessels of 1200 tons and boxes will lift 350 ton vessels. Yard is fitted with a large spar derrick, and a stock of spars always on hand.

THE FRONTIER IRON WORKS,

Fitted with "JOY" PATENT VALVE GEAR.



DETROIT, MICH.,

Builders of

TRIPLE EXPANSION

and all kinds of

Marine Engines

Engines furnished for Steamships:

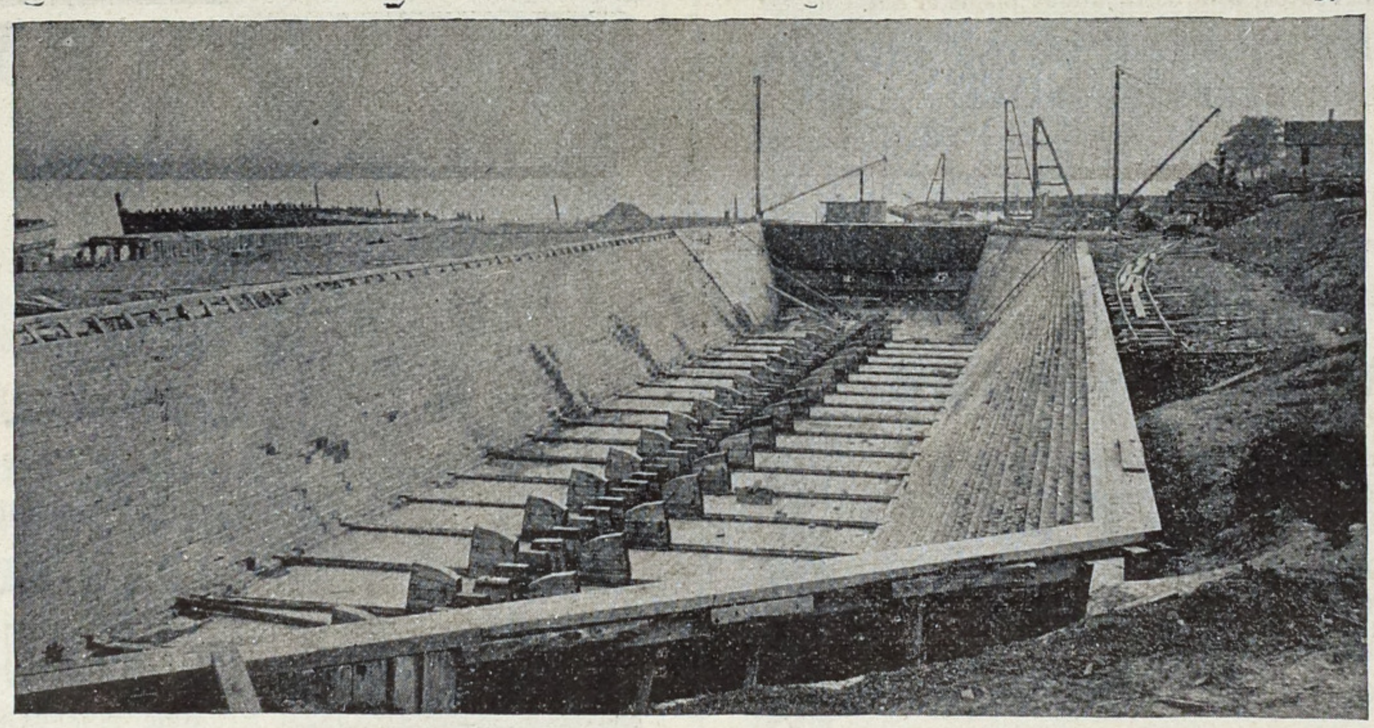
T. W. Palmer,
Livingstone,
Majestic, Tampa,
John Mitchell,
Nyanza, Fedora,
Geo. F. Williams,
Mackinaw,
Keweenaw,
Jno. Harper,
W. F. Sauber,
and Iosco.
Panther, (fore and aft compound)

DUNFORD & ALVERSON, PORT HURON, MICH.

SHIP BUILDING.

DOCKING,
REPAIRING,
SPAR MAKING.

DOCK HAS PIT TO SHIP RUDDERS.



NEW DOCK.

(Largest on the Lakes.)

Length: 400 feet.

Width: on top 95 feet.
bottom 55 "
at gate 62 "

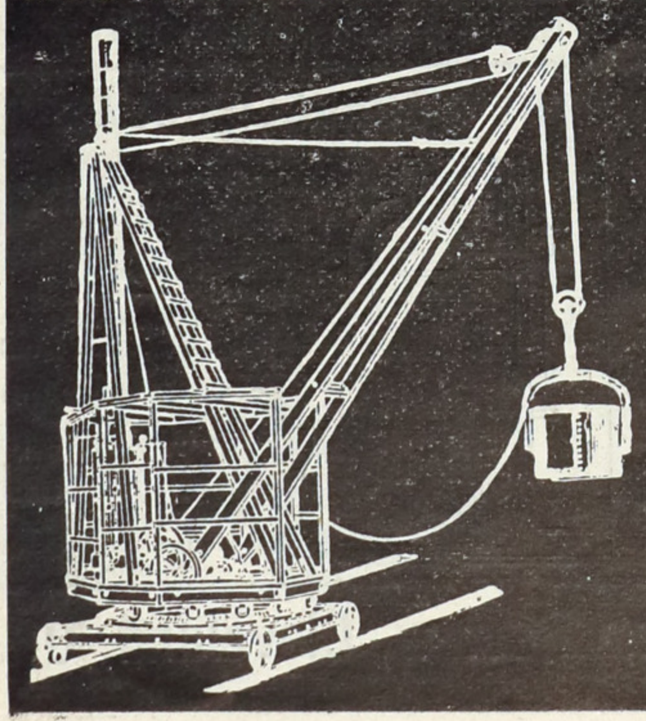
Depth: to floor 20 feet.
to sill 18 "
on blocks 16 "

Nearest Modern Dock to the SAULT or MACKINAW.

McMYLER MANUFACTURING CO., 180 COLUMBUS STREET, CLEVELAND, O.

SOLE MAKERS OF THE

McMYLER PATENT REVOLVING STEAM DERRICK



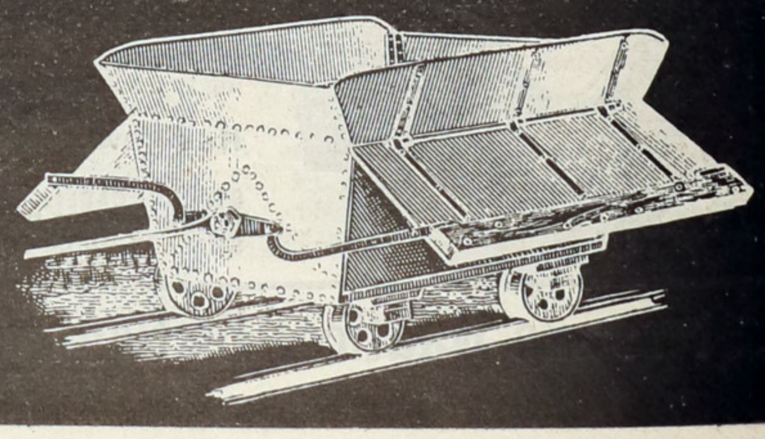
FOR HANDLING COAL, ORE AND COARSE FREIGHT OF ANY DESCRIPTION.

This Derrick can Lift Load, Alter the Radius of Boom, Swing in Either Direction at Will of Operator, and can Propel Itself on Track any Desired Distance.

BUILT FOR ANY CAPACITY WANTED

BUILDERS OF

CONVEYORS, COAL BUCKETS, ORE BUCKETS AND DUMP CARS.



SWAIN WRECKING CO. | TUGS FAVORITE and SAGINAW. | TELEGRAPH PARKER & MILLEN, DETROIT, MICH. Capt. M. SWAIN, CHEBOYGAN, MICH.

FOR SALE.

PASSENGER STEAMER NYACK.

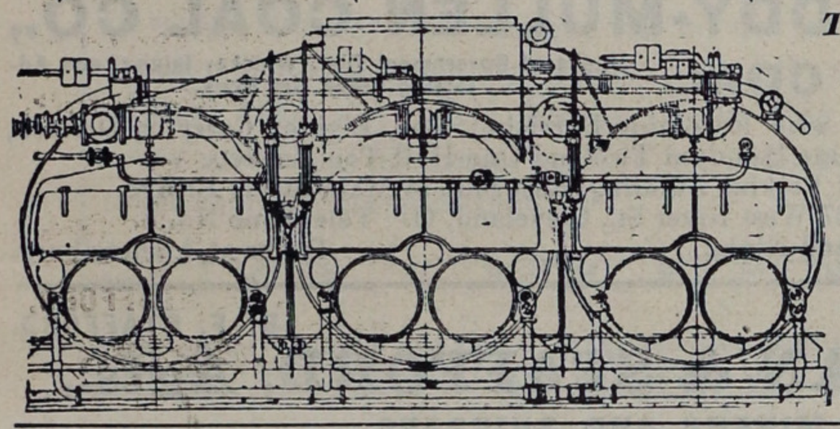
This Steamer is in excellent condition, with a fine Passenger Equipment.
Can be seen at dock in Buffalo.

Also, STEAMERS AVON and PORTAGE.

These ships are superior Package Freight Vessels in good condition and well found in every respect.
They can be examined on application to THOS. T. MORFORD, Agent in Chicago.

For Terms apply to or address, **W. W. BULLARD, General Manager, BUFFALO, N. Y.**

LAKE ERIE BOILER WORKS.



The Best Equipped plant in America for the manufacture of modern Marine Boilers.

—o—

BUFFALO, N.Y.

FARRAR & TREFTS,

Propeller, Yacht & Tug Wheels,

MARINE AND STATIONARY

ENGINES AND BOILERS.

REPAIRING PROMPTLY ATTENDED TO.

54 to 66 Perry Street, BUFFALO, N. Y. | Drilling Boilers and Engines a Specialty

JOHNSTON BROTHERS,

Ferrysburg Steam Boiler Works,

FERRYSBURG, MICH.

Marine, Locomotive and Stationary Boilers,

Tanks and Sheet Iron Work.

REPAIRS PROMPTLY ATTENDED TO.

HENRY BLOECKER & COMP'Y,

—MANUFACTURERS OF—

ALL CLASSES OF Marine Engines.

General Job and Repair Work promptly attended to.

GRAND HAVEN, - - MICH.

C. H. McCUTCHEON,

(Successor to SAMUEL McCUTCHEON.)

Copper, Tin and Sheet Iron Manufactory,

Steamboat and Engineers' Supplies.

All kinds of Brass Cocks, Globe Valves and Couplings, &c. Iron Pipe and Fittings, and Mill Supplies. Rubber Belting, Hose and Packings, Springs, Valves, &c., Leather Belting and Usudurian Packing.

Telephone No. 68. No. 18 Ohio Street BUFFALO, N. Y.

ERIE RUBBER CO.,

ERIE, PA.,

—MANUFACTURERS OF THE—

KEYSTONE MARINE VALVE.

These RED, AIR AND FOOT VALVES, are the Best Rubber Valves made.

UNITED STATES ENGINEER OFFICE, 34 West Congress street, Detroit, Mich., Jan. 19, 1892. Sealed proposals, in triplicate, will be received at this office until 2 o'clock p. m., March 4, 1892, and then opened: For furnishing Twelve Valve Frames and Fourteen Valves for the 800 foot Lock at St. Mary's Falls Canal, Michigan. Preference will be given to materials of domestic production or manufacture, conditions of quality and price (import duties included) being equal. Attention is invited to Acts of Congress, approved Feb 26, 1885, and Feb. 23, 1887, vol. 23, page 332, and vol. 24, page 414, Statutes at Large. The Government reserves the right to reject any or all proposals; also, to waive any informalities. For further information apply at this office. O. M. POE, Colonel, Corps of Engineers, Bvt. Brig. General, U. S. A. Feb. 11.

THE GRAND HAVEN SHIPBUILDING CO.,

D. ROBERTSON, Manager and Builder.

SHIPBUILDING, REBUILDING, REPAIRING,

TUGS. FISHING BOATS. YACHTS.

PHOENIX IRON WORKS

—MANUFACTURERS OF—

Modern Marine Engines AND Boilers

1223 to 1231 Fourth St., PORT HURON, MICH.

Telephone Nos. { Office, 15. Residence, 192. | Special Attention Given to Repairs.

HAVE YOU HEARD OF THE

HYDRAULIC STEERING GEARS.

IT IS ASTONISHING HOW WELL AND EASY THEY DO THEIR WORK.
Manufactured by

CRAWLEY & JOHNSTON,

CORRESPONDENCE SOLICITED CINCINNATI, OHIO.

DULUTH DIRECTORY.

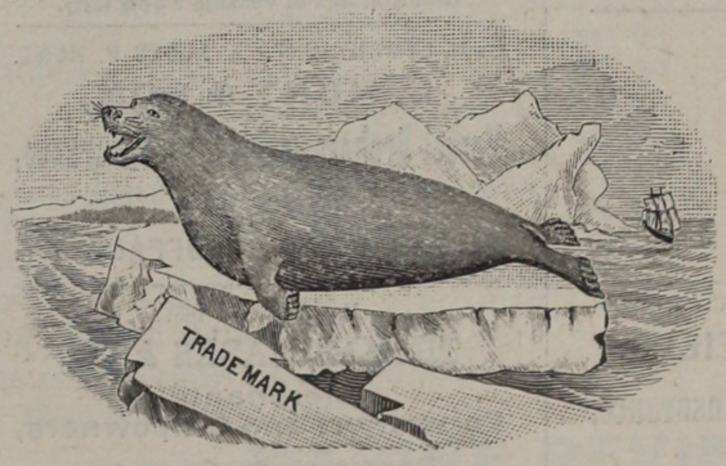
THE CLYDE IRON COMPANY,

OFFICE AND WORKS: 302, 304, 306 & 308 Lake Avenue, South, DULUTH, MINN.

R. A. WEBSTER, Supt.

Machinists, Foundrymen, Blacksmiths and Steam Fitters. Special attention given **Marine Work.** Ship Chandlery & Mill Supplies, Packings, Waste, Oils, Greases, Boiler Purgers, etc.

SEALINE LUBRICANT



Specially adapted for

Marine Engines.

A Solidified Oil. Clean, and does away with Oils and Greases. Higher fire test. Acknowledged the most economical Lubricant made.

H. B. KINGSLEY & CO.,

CLEVELAND, O.

288 SENECA STREET,
(new number)

Telephone 2126.

BROKERS & ADMIRALTY ATTORNEYS.

H. D. GOULDER. GOULDER & PINNEY, O. C. PINNEY.

LAWYERS AND PROCTORS IN ADMIRALTY,

CLEVELAND, O.

ROGER M. LEE. LEE & TILDEN, DUANE H. TILDEN.

Proctors in Admiralty.

Telephone 1191. 504 Perry-Payne Bldg., CLEVELAND, O.

C. E. KREMER, *Attorney and Counselor-at-Law and Proctor in Admiralty.*

Rooms 14, 15 and 16, Bryan Block, - - 164 LA SALLE ST., CHICAGO, ILL.

CLEVELAND BOOK BINDERY,

196 Seneca St., CLEVELAND, O.

BLANK BOOKS

In Stock and Made to Order.

BINDING

Magazines and Periodicals a Specialty.

W. L. Windom

ATTORNEY-AT-LAW AND PROCTOR IN ADMIRALTY

Marine Notary.

ASHLAND, WIS.

T. G. Crosby, C. A. Macdonald, J. J. Rardon.

CROSBY, MACDONALD & CO.

General Insurance Agents,

RIALTO BUILDING, CHICAGO, ILL

C. W. ELPHICKE. A. L. FITCH. JAS. A. MYERS.

C. W. ELPHICKE & CO.,

Vessel Owners and Agents, Marine Underwriters,

Rooms 10, 11 and 12, WHEELER BLOCK. 6 and 8 Sherman St. CHICAGO.

Telephone 1194.

JOHN C. FITZPATRICK. JOHN MITCHELL. JOHN F. WEDOW.

MITCHELL & CO.,

Vessel and Insurance Agents,

508-509 Perry-Payne Building, CLEVELAND, OHIO.

Office Telephone, 737. Residence, John Mitchell, 3506. J. C. Fitzpatrick, 2305.

White, Johnson & McCaslin,

ATTORNEYS-AT-LAW,

—AND—

Proctors in Admiralty,

26-27 Blackstone Building,

CLEVELAND, - OHIO.

JOSIAH COOK, ATTORNEY,

And Counselor at Law and Proctor and Advocate in Admiralty.

Office, Nos. 12, & 14 Spaulding's Exchange, BUFFALO, N. Y.

Special attention given to all U. S. court and admiralty business in all its branches and the collection of Seamen's wages.

THOS. WILSON,

MANAGING OWNER

WILSON'S TRANSIT LINE.

Gen. Forwarder.

Freight and Vessel Agent.

CLEVELAND, O.

WARNER & CO.,

Vessel Agents and Brokers,

Nos. 511 & 512 Perry-Payne Building,

Superior Street, CLEVELAND, O.

C. F. Palmer. Chas. Hutchinson. P. J. Minch.

PALMER & CO.,

Vessel Owners and Agents,

(John H. Palmer and Jonn T. Hutchinson, Associates.)

Perry-Payne Bldg., Cleveland, O.

W. A. HAWGOOD. C. C. CANFIELD.

HAWGOOD & CANFIELD,

Vessel Agents and Marine Insurance,

604-605 Perry-Payne Bldg.,

Cleveland, - Ohio.

Telephone No. 2395.

E. T. HITCHCOCK,

Average Adjuster,

184 Main St.,

BUFFALO, N.Y.

Moore, Bartow & Gilchrist,

Ship Brokers & Agents,

Nos, 611 & 612 Perry-Payne Building,

Superior Street, Cleveland, O.

H. J. WEBB & CO.

SHIP BROKERS, VESSEL OWNERS and AGENTS,

Established in 1856. H. J. Webb & Co. will charter vessels for the lake trade. Special attention given to chartering vessels in the Lake Superior Iron Ore trade, both for the season and single trip.

☞No. 606 & 607 Perry-Payne Building, Cleveland, O. Office Telephone No. 338, Residence No 3228.

J. T. ROSE. FRANK B. LAZIER.

ROSE & LAZIER,

Vessel Agents and Brokers, and Marine Insurance,

16 Board of Trade,

DULUTH, - - MINN.

H. F. SPRAGUE,

Marine Artist,

Studio at Huron, O.

Headquarters at MITCHELL & CO.'s

CLEVELAND, - OHIO.

Oil Paintings of Vessels a Specialty.

Capt. LYMAN HUNT. JAMES P. HUNT.

L. HUNT & SON,

Vessel Brokerage and Marine Insurance,

Room 9, Exchange Building. Telephone No. 522.

No. 202 Main St., BUFFALO, N.Y.

Established 1857.

THOMAS MARKS & CO.,

Merchants, Forwarders and Shipowners,

Port Arthur, Canada.

N. B.—Special attention given to chartering vessels.

FUELING COMPANIES.

THE SANDUSKY COAL COMPANY,

MINERS AND SHIPPERS OF

THE GENUINE JACKSON HILL AND WELLSTON SHAFT

COAL.

Office with R. B. Hubbard & Son. Telephone 32.
Dock Office and Derrick, Big Four (C.C.C. & St. L. R'y).
Dock Telephone 163. S. B. HUBBARD, Treas & Gen. Mgr.

Boats Coaled Night or Day. Electric Light. Night Telephone 318.

SANDUSKY, OHIO.

To Owners and Masters of Steam Barges.

—:o:—

We beg to call your attention to the fact that we have steam lighters at the ports of Cleveland, Ashtabula and Buffalo, specially equipped for fueling vessels, which enable us to run alongside steamers and fuel them while they are unloading during day or night time. We also have fueling docks at the above ports, at which we can take care of vessels not desiring to avail themselves of the services of the steam lighters. We shall in the future, as in the past, handle nothing but the best grade of Pittsburg coal, and respectfully solicit your patronage.

PICKANDS, MATHER & CO.

THE CUDDY-MULLEN COAL CO.,

Dealers in COAL. Docks at Government Pier, Whiskey Island, and Adjoining Globe Dry Dock.

All fully equipped with Revolving Derricks; also, Lighter Carrying Derrick, and One Hundred Two and One-Half Ton Buckets.

Main Office, 81 Perkins Building, East Side of Main Street Bridge.

Dock Office, 127 West River St., Cleveland, O. Telephone No. 8.

Boats Coaled Day and Night. Docks at Amherstburg.

N. J. BOYLAN. B. F. STAFFORD.

BOYLAN & STAFFORD, Agts.,

MINERS AND SHIPPERS,

Youghiogheny and Ohio Steam Coals. Steamboats, Tugs, etc., Coaled day or night, DOCKS FOOT WEST RIVER STREET. WHISKEY ISLAND GOVERNMENT PIER and C. & P. R. R. SLIPS. Also STEAM LIGHTER—Equipped with Revolving Derrick and (100) two ton buckets.

Telephone 1608. Office, 130 West River St., CLEVELAND, OHIO.

SIMPSON & MORRISON, Compass Adjusters, and manufacturers of

All Nautical Instruments carefully repaired. NAUTICAL INSTRUMENTS.

Office with UPSON, WALTON & CO., 161 River St., CLEVELAND, OHIO.

ADVERTISING.

IF you wish to advertise anything anywhere at any time, write to GEO. P. ROWELL & CO., No. 10 Spruce St., New York.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of "Book for Advertisers." 368 pages, price one dollar. Mailed, postage paid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address ROWELL'S ADVERTISING BUREAU, 10 Spruce St., N.Y.

MILWAUKEE BOILER COMPANY,

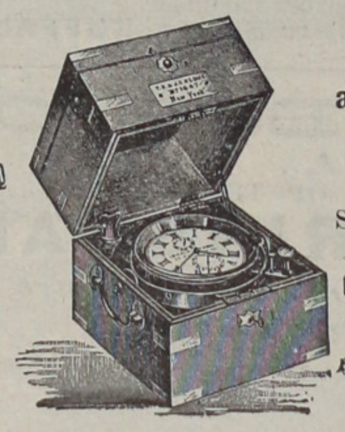
[Successor to R. Davis Marine Boiler Works.]

Manufacturers of Marine and Stationary Boilers, Smoke Stacks, Tanks, Etc.

MARINE REPAIRING SPECIALLY ATTENDED TO. | Open Day & Night. | OFFICE AND SHOPS, OREGON BET. BARCLAY & So. WATER STS.

T. L. McGREOR, Supt. MILWAUKEE, WIS. Telephone 742.

T. S. & J. D. NEGUS



Have the largest and finest stock of Nautical Instruments and Charts in the United States.

Estimates given for

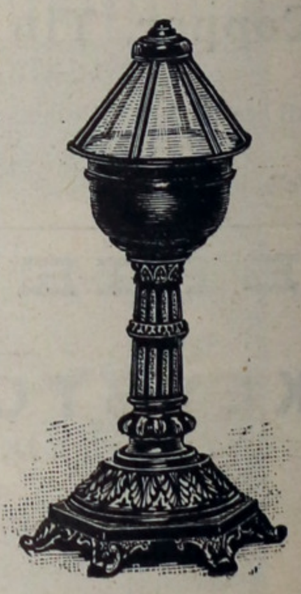
Outfits of Steamers and Pleasure Yachts.

Compass Adjusters.

Send for Catalogue and Almanac.

140 Water Street, New York City.

☞Every attention given to Trade orders.



S. F. HODGE & CO.

MARINE ENGINES,
PROPELLER WHEELS,
DECK HOISTERS,
MARINE REPAIRS.

320 ATWATER STREET,
DETROIT, MICH.

HAYES, HEINE & STACK,

MANUFACTURERS OF

MATTRESSES PILLOWS, AND BEDDING.

We make a specialty of fitting out vessels. Send for Prices.

70 EAST RIVER STREET, CLEVELAND, OHIO.

ERIE OIL COMPANY,

HIGH FLASH. **ERIE, PA.,** HIGH VISCOSITY.

MANUFACTURERS OF THE

Monarch Valve Cylinder and Engineers Valve Oils,

THE MOST PERFECT CYLINDER OILS FOR MARINE USE.

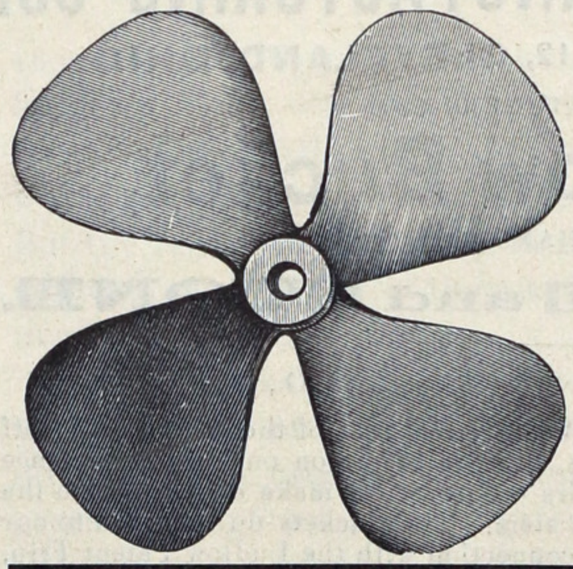
EVERY BARREL GUARANTEED.

KNOWLES Steam Pump Works.

93 Liberty St. NEW YORK. | 113 Federal St. BOSTON.

IMPROVED PUMPING MACHINERY For Every Class of Work. | Send for New Illustrated CATALOGUE

SHERIFFS MANUFACTURING COMPANY,



C. STARKE, Pres. W. H. MEYER, V. Pres.
THOS. W. SHERIFFS, Manager.

Manufacturers of

MARINE ENGINES,

PROPELLER WHEELS,

Dredge Machinery of Latest Design.

MARINE REPAIRS AT ALL HOURS.

124, 126, 128, 130 & 132 Barclay Street,
MILWAUKEE, WIS.

Telephone 163.

MANISTEE IRON WORKS CO.

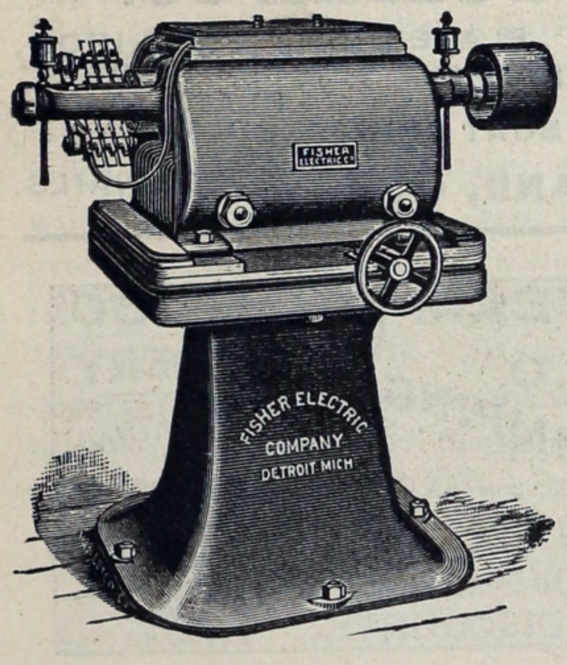
Manistee, Mich.,

MANUFACTURERS OF

Marine and Stationary Engines and Boilers.

Triple Expansion, Fore and Aft, and Steeple Compound Engines, and High Pressure Engines,

General Mill Machinery and Salt Well Outfits.



THE INCANDESCENT LIGHT

Is the only safe means of illuminating Passenger, Freight or Excursion Steamers. All other illuminants are dangerous. The Fisher system is Automatic in its operation, perfect in every detail, and does not require a skilled expert.

FISHER ELECTRIC CO.

183, 185 & 187 Larned St., DETROIT, MICH.

"The man whoknows so much about his profession that he cannot learn something about it by reading and study, has a very small profession or a very large cranium."

Marine and Mechanical Literature and Periodicals.

	Per Year.
Nautical Dictionary, (Patterson)	$ 5 00
Nautical Dictionary and Marine Review	6 00
Scotts' Coast Pilot, (1891 Edition)	2 00
Scotts' Coast Pilot and Marine Review	3 00
Engineering, (London), Weekly	10 00
Engineering, (London), Weekly and Marine Review	10 00
The Engineer, (London), Weekly	10 00
The Engineer, (London), Weekly and Marine Review	10 00
The Engineer, (New York), Semi Monthly	2 00
The Engineer, (New York), and Marine Review	3 80
Engineering, (New York), Monthly Magazine	3 00
Engineering, (New York) and Marine Review	4 00
Emerson Binder, (that will hold 52 Nos. of the Marine Review)	75

All marine, scientific, mechanical or trade publications furnished to subscribers of the MARINE REVIEW at *25 Per Cent. less* than subscription rates.

WESTERN OFFICE,
210 So. Water St.,
CHICAGO, ILL.

MARINE REVIEW,
510 Perry-Payne Bldg., CLEVELAND, O.

KING IRON BRIDGE & MFG. CO.,

CLEVELAND, O.,

Iron and Steel Bridges, Girders, Buildings and Structural Work of all kinds, Hoisting and Conveying Machinery for Handling Ore, Coal, &c.

B. D. BABCOCK, President. W. E. LUDLOW, Vice-Pres. & Gen. Mgr.
W. R. HUNTINGTON, Sec'y & Treas.

THE LUDLOW MANUFACTURING CO.

Office, 121 Superior St., Room 12, CLEVELAND, OHIO,

MANUFACTURERS OF

The Ludlow Bucket,

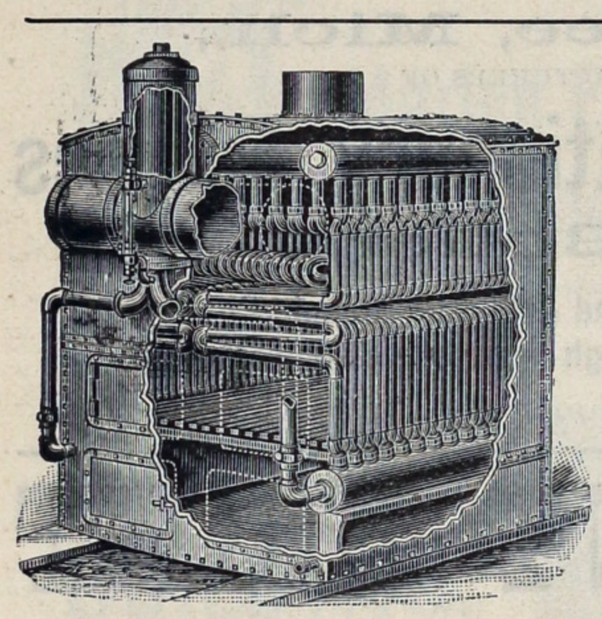
FOR THE HANDLING OF

COAL, ORE and STONE.

CLEVELAND, O., Nov. 18, 1891.

TO WHOM IT MAY CONCERN:—We have had four of the one and one-half ton and four of the two-ton Ludlow Buckets in use on our coal docks since July 5, 1891, and have had no repairs whatever to make on them, with the exception of replacing one defective stem. The Buckets do the work to our entire satisfaction, and when used in connection with the Ludlow Patent Trip, which has been in use on one of our derricks for the past six weeks, they are, in our opinion, away ahead of any other coal buckets we have ever seen used.

J. S. ASHLEY, Agent.
New York and Cleveland Gas Coal Co.



ALMYS'S PATENT SECTIONAL WATER TUBE BOILERS

FOR

:: MARINE and :: STATIONARY WORK

Manufactured by

ALMY WATER TUBE BOILER CO.
Providence, R.I.

"The use of boilers of the coil type in vessels of small displacement and enormously large power is already a necessity, and it will not be many years before their use will be general in all steam vessels."—Engineer-in-Chief Melville, U. S. N.

OMAR D. CONGER. CHILION P. CONGER.

Conger & Conger, Attorneys and Counsellors at Law,

No. 45 Corcoran Building, Washington, D. C.

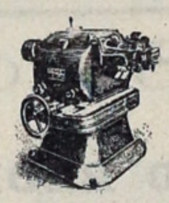
We make a specialty of all Marine and Shipping Business before the Treasury Department and Congress. Patent Business. Practice, Court of Claims and U. S. Supreme Court.

PATENTS

Patents Obtained in the UNITED STATES and FOREIGN COUNTRIES.

M. D. & L. L. **LEGGETT**

Attorneys at Patent Law,
Masonic Temple, **CLEVELAND, OHIO.**



FISHER ELECTRIC COMPANY
MANUFACTURERS
DETROIT, MICH. Jan. 4, 1892.

Editors of the Marine Review,

Cleveland, O.

Gentlemen:--

You may renew our contract for advertising for the coming year. We have obtained most successful and unexpected results from the advertisement carried in your paper.

We heartily endorse the energy displayed in placing your paper in the "front rank" of marine journals.

Very truly yours,

FISHER ELECTRIC CO
Frank E. Fisher
TREASURER

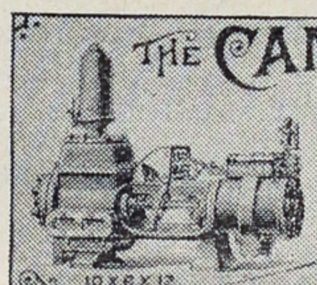
The Jenks Ship Building Co.

GENERAL SHIP BUILDERS,

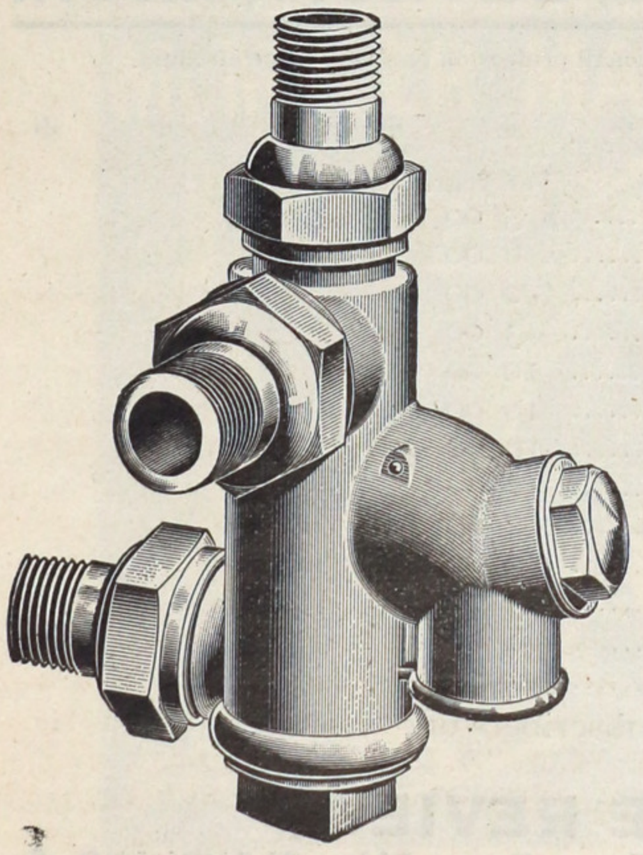
Correspondence Solicited. **PORT HURON, MICH.**

THE CONDIT-FULLER CO.

BAR IRON; SHEET IRON, PLATE IRON, PIG IRON,
BOILER TUBES. BOILER RIVETS, PLATE STEEL,
GAS PIPE, BOAT SPIKES,
CLINCH RINGS, **CLEVELAND, O.** STEEL NAILS.



THE CANTON STEAM PUMP CO.
CANTON, O.
MANUFACTURERS OF
FOR BOILER FEEDING AND GENERAL PURPOSES.
THE MILLER DUPLEX PUMPING MACHINERY.
NEW DESIGNS AND IMPROVEMENTS.
WRITE FOR CATALOGUE AND DISCOUNTS.



Have You Bought Your Injector?

IF NOT, TRY THE

PENBERTHY AUTOMATIC INJECTOR,

NOW BEING USED ON 500 LAKE STEAMERS, PROPELLERS AND TUGS.

Warranted Re-Starting and Absolutely Automatic in any weather and under all conditions. Lifts 20 feet; Works from 25 to 150 lbs.,—200 if so ordered.

We refer without permission to any Engineer using the **PENBERTHY AUTOMATIC INJECTOR**

SOME OF THE BOATS USING THEM:

STEAMERS—Skater, Maine, Panther, Harper, H. A. Tuttle, Oregon, Rhoda Stewart, Frontenac, Transfer, Chenango, C. B. Lockwood, Evalyn, John Lynch, Fashion, K. M. Hutchinson, City of Berlin, Masten, Glance, Prindle, Aztec, R. C. Wente, Cumberland, W. H. Stevens, Oscar T. Flint, Viking, John Oades, Fred Pabst, Langell Boys, Colgate Hoyt, Byron Whitaker, J. W. Moore, F. W. Fletcher, Ferdinand Schlesinger, J. L. Colby, Tasmania, Schoolcraft, M. M. Drake, Geo. King, Lansing, Rudolph, F. S. Rose, S. C. Clark, Island Belle, Tice, Niagara, Susan E. Peck, J. C. Gilchrist, Iron Duke, Gettysburg, Livingstone, S. E. Curtis, Clara, Grace Dormer, Mary, N. Mills, Manistique, Nipigon, Miztec.

TUGS—D. L. Hebard, Maytham, A. J. Smith, James Hay, Pensaukee, Alva B., W. L. Chamberlain, Drednaught, C. C. Curtis, Jas. Amadeus, S. S. Stone, N. B. Gates, L. P. Smith, Chas. Castle, Allie May, W. W. Moore, Helene, Park, Torrent, Mocking Bird, Mollie Spencer, Geo. Hand, Sea Gull, W. B. Castle, Behn, Annie C. Pierce, David B. Hill, C. A. Charm, Donaldson, Oneida, Queen City.

YACHTS—Alex. M. Sloan, Despatch, Myra, Iris, Ivey, Benoit, Sport.

These Injectors are worranted **Absolutely Automatic and Restarting**, and can be obtained from any of our Lake Agents, as follows: RIVERSIDE IRON WORKS, Detroit; JAS. CLEMENTS & SON, Bay City; J. H. RUCKEL & Co., Buffalo; STANNARD & DILLON and MARINETTE IRON WORKS, Chicago; C. H. PRESLEY, Cleveland; SHAW, KENDALL & Co., Toledo, O.; ERIE CITY IRON WORKS, Erie, Pa.

PENBERTHY INJECTOR CO., Manufacturers, 7th and Abbott Streets, Detroit, Mich.